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The Physiotherapy Review

Medical Library

Vol. IX No. 5

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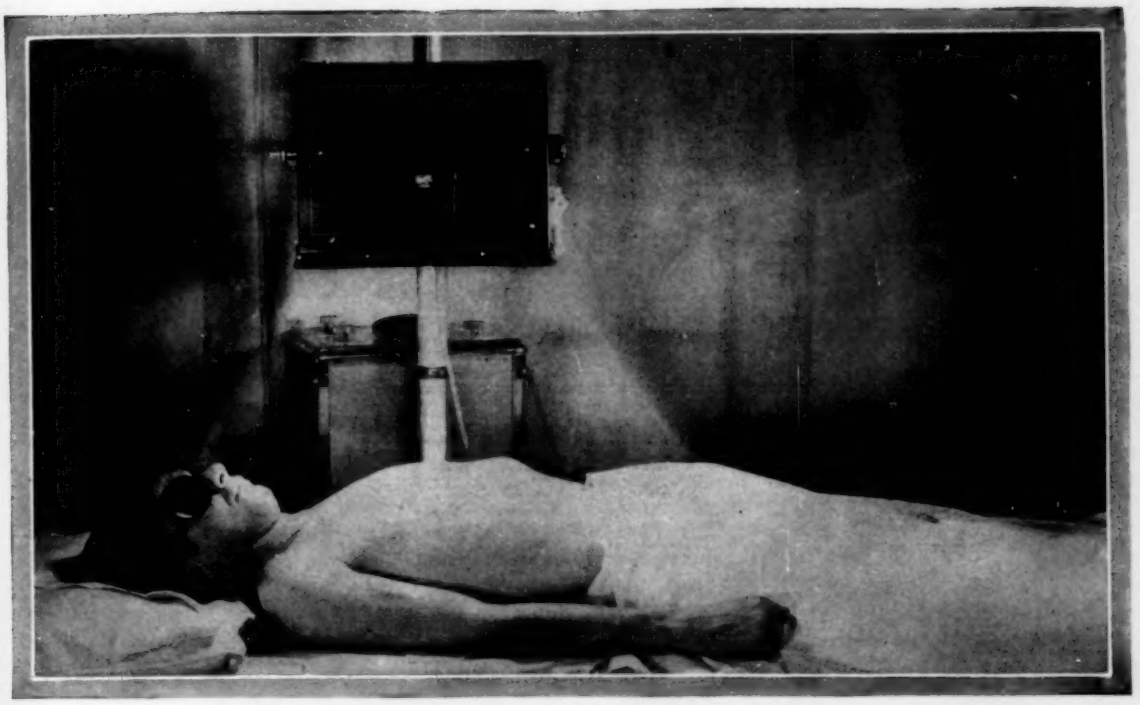

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The Role of Physiotherapy in the Practice of Medicine

Harold M. F. Behneman, M. S., M. D., San Francisco, Calif.

A playwright or a novelist usually writes his play or his book, and then picks out a suitable title. A few weeks ago, however, I found myself in the peculiar predicament of having to write material to fit a title, which, in one of my weak moments I had given to your secretary. And so, tonight, I accept your kind invitation and approach you with a paper entitled "The Role of Physiotherapy in the Practice of Medicine." Please don't acquire a deep depression in the fear that once again you have to listen to someone expound upon the merits of your specialty, because if you do, your fears will be unwarranted. I chose that title in somewhat the same spirit, but not with the same nonchalance that a famous professor at Wisconsin delivers scientific addresses to his society colleagues at their quarterly dinner and meeting. His material is always excellent, but unrelentingly deep in zoological scientific data, so he facetiously shows lantern slides of his latest hunting or fishing trip while he lectures, in order that if the ear fails to respond to his delivery, at least he can depend upon the visual attention and interest. So, I must confess, my title is somewhat ambiguous and even a subterfuge. I come to you with a non-technical paper, of a general nature, but with sincerity of purpose and firm convictions behind it.

The medical expeditionary forces really consist of three divisions—you, the surgeons, and the internists. From the ranks of the latter, I come to you tonight, in reality asking for more man power, not to strengthen our line exactly, but to straighten it out a little; whatever I may say, I ask that you remember that I come as a practitioner of medicine, per se, deeply interested in physiotherapy, but actually not well-versed enough in the actual mechanics of your specialty to be called a physiotherapist. Before I finish you will see why I stress this point—why a former instructor in pharmacology with the pharmacopeia his working Bible, leaves his ranks to ask aid from another division. In other words, I am coming from a medical group, who as a whole use little or no physiotherapy, know still less about it, and have practically no contact with it.

First of all, you know and I know that medicine as a whole is a three-legged stool. We also know that your leg of physiotherapy is the oldest, and yet the least used. It was seen in China three thousand years ago, in Greece two thousand years ago and so on, through the ages. Like most antiques it was for centuries either disregarded or taken for granted, like the bureau in grandma's bedroom. Then recently when a few million people reverted to their infancy and started fighting, this old man Physiotherapy bobbed up again, got some of his due recognition and reward and increased use. Now we also know, you and I, that the mechanical application of Nature's own forces is the most logical and rational therapy possible. And last but not least, let me remind you that physiotherapy despite all this, has had the bitterest fight for ethical recognition and still has the largest collection of parasites outside the national museum preying upon it as they have from time immemorial. Well and good; we shall agree upon the above as accepted facts. Now why is it so, and what are we going to do about it?

As I recently digested bits of that delightful three hundred year old essay of Sir Thomas Browne's, entitled Religio Medici, I came across a line that is well applicable to our subject. He wrote that "the long habit

of living has indisposeth us for dying." And I really believe that the habits of physicians for generations in drug therapy have been a serous obstacle to the advance of physical therapy. Habit is certainly an octopus, far-reaching and most unwilling to have its hold broken. It is so much the easiest way. It is my honest opinion that most of the blame for the shameful reception and slow acceptance of physical therapy is at the feet of the physician. Ethical to the nth degree, ethical to the point of biting the hand that would feed him, and undoubtedly at times as lethargic as a turtle, he has waited for scientific approval lest he be accused of empiricism by his reticent colleagues. Sixty per cent of the practising physicians of this country are not in quick contact with opportunity for research of any kind. They are spread over vast areas through which they must travel to administer to the sick; their hours are long, and their relaxation for study is indeed most often denied them. The honest physician cannot conscience-free try the multitudinous physical measures and modalities he hears about, upon his sick and trusting patients. There are a few he can be honest with and tell what he is attempting, but only a few. The public is very fickle and their reaction is fast to a man whom they suspect of not knowing exactly what he is doing. Ambulance chasing lawyers are alert to prosecute on the complaint of grieved and supposedly injured patients. The physician has found that appliances cost a great deal, and until recently some of them were almost prohibitive in price. And most unfortunately, there has been no law against lying, with the result that the doctor has been actually besieged by apparatus salesmen ever since the war. I can honestly say that the majority of them have been scurrilous liars, ignorant of their own physiology, and yet attempting to tell the physician the limitless powers of their wares. A good salesman can sell fur-lined boots to desert travelers; some of them haven't the conscience of a flea, nor even a ghost of an idea of the physical laws that govern our metabolic processes. And yet, if we could reclaim all the money that has been spent for pure bunk by us practitioners of medicine, we could erect a magnificent training school. So, for the past few years, the physician has considered every salesman guilty until proven innocent, and almost rightly so. He has also considered the attitude of manufacturers in making and selling worthless machines and appliances, and the fact they willingly sold them to anyone and everyone, doctor of medicine or of chiropody. Until the Council on Medical Education and Hospitals was formed, he had no one to turn to except yourselves for honest information, and all that takes time, and time is always flying past the busy man.

So, because of these things and many other lesser ones, the physician has balked strenuously in purchase of equipment, in belief in physical therapy, and has most often advised his patients against resorting to such methods for cure. He has done so with a deep sense of honesty in the big majority of cases. What has he seen happen? The laity, the cultists, the fakirs and a small group of honest trained physiotherapists withdrew a tremendous group of patients from the office of the doctor of medicine. And in the large percentage of cases, because Nature was doing the work, they have helped this multitude. We have seen the most ignorant and unreliable persons with a bankroll and no training whatsoever take hold of these methods, put Nature itself into harness, reap a reward in finances, make a lot of people feel better, and bury a moderate number of mistakes. Medical science has so enthused over chemical advances and scientific research in the frantic effort to get at the etiology of our dread diseases, that therapy has been sadly neglected, and quackery increased. It has hurt the medical man's pride that the town half-wit could go and buy an alluring piece of shiny metal and make people feel better, when that instrument has in it death dealing qualities. Narcotics and drugs are covered in their proper usage by law, and cannot be prescribed except by the doctor of medicine, and yet the user of mechanical apparatus is not amenable to the law unless he be convicted of negligence. I wonder if you have ever stopped to realize what a very ethical person an honest physician must be. He is markedly limited in the extent to which he can publicly acclaim or denounce an object or a person; he has been imbued with the lesson of continual reticence before the public eye; his faith in the oath of Hippocrates has resulted in his failure to openly take the stump against the pagans of practice. The cultists have always been aware of the hatred a physician has for publicity. They have known that they could stand upon a soap-box and sell worthless patent medicines by the hour, while the physician walks by, saying to himself "That is wrong; I shall never be so dishonest with people." And the fickle public thinks he doesn't know about it, or is jealous of Mr. John Smith down the street who quickly relieves people of their pain. We must realize that eighty per cent of sick people have their minds one hundred per cent on relief from pain or discomfort. Diagnosis means little or nothing to them, but the large fee just to find out what they have does mean something, and if all that can be dispensed with, and they can go to anybody who connects them up with some form of relief they'll go, and believe me, they have gone.

What has all this done? A lot of unfortunate things and a few good ones. The former I've mentioned to some extent; among the good effects have been your conception and organization, the Council of the American Medical Association, a few training schools, and last but not least, the physician has been made to realize two things: First, that physical therapy is a formidable weapon against disease, and secondly, that unless he does learn about it and practice some of it he will continue to support the cultists and the quacks and neglect a form of therapy his patients should have access to. He has watched with amazement not unmixed with scorn at the thousands who flocked to buy Wilshire's famous "horse-collar," knowing all the time that a few dry cell batteries could do the same thing and provide the same psychic tantrums as a sitting at one of Clara Bow's latest dramas. He has almost been made to believe that the term "high frequency" means eighty patients a day in someone else's office and not his. His years of educational investment appear to him ironical and his amazement and disgust turn to disdain, but standing by and being disdainful isn't helping out the situation.

And now, the first part of my paper draws to a close. I have tried to enumerate a few causes and a few reactions, providing somewhat of a background for the real purpose of this paper. The situation is deplorable, but it is true. It is hard for you to believe that I am not an alarmist when I say that physical therapy is unused, or used incorrectly with inadequate understanding by the large majority of American physicians. Remember that you are making it your livelihood and your profession, and that you are working in contact with men who specialize in it or at least appreciate its value and use it. But there are five hundred or so of you to almost a hundred thousand medical men. Especially you fortunate workers here in Portland, long a pioneer in the stronghold of physical therapy, are apt to feel that throughout the country the same wide response to your specialty is being given. It isn't and it can't be, until several things happen. If Mahomet won't or can't come

to the mountains, in this case, you'll have to go to Mahomet. No doctor's time is his own. With every mail his waste basket fills up with unopened literature, even when it says physiotherapy, because unfortunately that word has too often been misused and misunderstood. Very few doctors can afford to leave their practice to go to one of the few training schools of recognition; very few of them see why they even should go, and if needs be after a woeful period of waiting, they will hire someone not recognized by you to handle their quartz lamp and a new worthless suitcase diathermy. When they don't get results they're disgusted. And so the cycle goes on.

Now with this background, I'll head the real theme of this paper with the following flat statement, and that is that in my opinion and others as well, the American Physiotherapy Association can do more for physical therapy in all its aspects than any other body in America. In the next few minutes I am taking the liberty of suggesting some means of carrying out this tremendous task. It's really difficult for me to picture to you the almost daily occurrences that cause me to wonder in despair at the present situation. Your president, Miss Furscott, is probably aware of some of this apathy on the part of medical men in our city of San Francisco. But I come in contact with men who never use physiotherapy and aren't interested. The very day before Miss Ballard asked me to speak to you tonight this amazing thing happened. A senior student about to start internship at the American school of America's second largest university came up to me and said, "Doctor, just what is diathermy?" That incident, together with the experience of trying to convince a medical school staff of the need of a physical therapy department, has indeed filled me with many reactions. After passing through all the stages of amusement, bewilderment, amazement, indignance and disgust, it's often made me feel like the irate drinking husband, who after shooting up everybody in the home, remarked "I'll lose my temper one of these days."

Now here are a few of the reasons why I feel that you can do so much for the cause. You are closer to the practising physician than any other physical therapy group. Your membership is large and it is scattered throughout the country in various units. Most of you are working with or under the direction of physicians. You at least have contact with them. You do not have to rely upon the written word, and I tell you that letters and pamphlets in the big majority of cases find that a straight line is the shortest distance between the mail and the waste-basket. There is so much pure bunk that comes in the mail that we can't stop each day to read it and separate the wheat from the chaff. You can, as times goes on and you enlarge, reach personally through some member or through the doctor a member is with, almost any group of physicians you wish to. Through them you can reach your county and state medical society. You can divide from state units on down the line into even community units working out separate problems. I am not unmindful of the splendid work and great plans of the Council on Physical Therapy of the American Medical Association, but their task for some time to come is to investigate the claims of manufacturers, to investigate educational possibilities and work out the actual mechanics and physiological action of innumerable pieces of apparatus. They must handle the legal and judicial end, as the council on pharmacy and chemistry has done in the standardization of drugs. No matter which way you turned in your crusade and pilgrimage to the doctor himself could you possibly hinder the work of the council, and very rarely overlap it. For some years, your paths are separate, but both are leading to the same open road of standardization and recognition. Their headquarters are central, your are nationwide. Their contact is through the press, yours can be through personal contact. You are actually on the battlefield, while headquarters is busy evaluating the objectives in view.

In detail, you can accomplish the following:

First and foremost in my mind is the necessity of informing medical students in the thirty-six medical schools of America who do not teach physical therapy. It can be done in several ways. The dean of a medical school will gladly give your representative upon proper assurance of her plans, the time to address a class or present a clinic. In one class hour, a lot can be accomplished. Lantern slides leave lasting and firm impressions; an educational film will do still more, and the demonstration of apparatus with the basic physiology behind it is the most ideal manner of presenting the idea. From the dean's office, anyone can get a list of all registrants in each class. Students are more conducive to letters than the busy doctor. Write them briefly in clear, unadorned language of who and what you are, and that you will gladly help them at any time in problems relating to all phases of physical therapy. Stress that you are working with and are approved by the American Medical Association. Don't write too much at once, but twice or three times a semester let them hear from you. These mimeographed sheets cost very little. I'll wager that you will get response, and that if that school doesn't have some sort of a beginning of a physiotherapy department within a short time, it won't be your fault or the students. At least they'll know what modalities they are, and that their school hasn't got them. They are the individuals to reach first, because as they graduate your problem will be annually that much less. They will start practice knowing something about the possibilities of the subject.

Another point is this: Only two out of seventy medical schools in America seem to have an approved school or teaching department of physical therapy. Yet most of them have training schools for nurses and a department for training laboratory technicians. One of the chief obstacles of a good physical therapy department is the cost. Funds for equipment come from the regents of a university; they are approached on the side through personal contact, which is hard to accomplish, and by the deans of the different divisions. The dean in turn is influenced and guided by members of his staff. Now that staff is composed of a good many active men. Here is your second means of attack. A good percentage of these men are members of their county medical societies and their attendance is fairly regular. You are in contact with some physician who is either specializing or using physiotherapy to a great extent. He can present both a paper and a short clinic before his medical society, giving them actual facts, savings in sick days, relief from pain and immobility, and other interesting, convincing data. Those papers are often published in the medical journals. In the above plan, you reach practising physicians as well as university staff members.

Third in importance, to me, comes the publication of articles in medical journals, particularly the Journal of the American Medical Association and State Society Journal. These are the chief journals the busy man reads. If I am running a laboratory of unusual excellence and turning out unusual research work, you probably won't be aware of it unless I publish an article in your journal, because we must be free to admit that not many of us read journals of other so-called specialties. Neither does the average doctor. If he reads each week the two

journals I mentioned, he's doing well. Therefore, get your physical therapy into medical journals whenever possible. The publishers and editors of these journals are also always glad to cooperate with anybody who is working for reform. Through the journal and by notices on society bulletin boards, you can let the physician know of your work and your purposes and willingness to help.

Fourth, relay in every way possible the work and decisions of the Council of the American Medical Association. I realize that already section D of Article 2 of your by-laws states that you have a bureau of information available to members of the medical profession. I only hope that in some way you will make physicians realize that and keep driving it home to them.

Fifth, a splendid piece of work awaits you right now in California. The California State Medical Association has no section on physiotherapy. Every other specialty has. The procedure to create a section is simple. Get the signatures on a petition, of only twenty M. D.'s in California practising physiotherapy as a specialty; send it to the proper committee and they will vote upon it at the next meeting. There's no reason for not having a vote next May. Then at each state meeting, you'd have your own section, papers and gathering.

And so on, I could take more of your time, but to me, these are the chief problems at hand. You can do for physiotherapy standards and employment of registered technicians what the American Society of Clinical Pathologists has done for clinical laboratories. The clause in your constitution to work only under the supervision of doctors of medicine may seem harsh, but if you will align your loyalty with the doctor, you will always find, I am sure, strengthened security, greater permanence, wider recognition and constant loyalty.

I hope you have, in the future, plans for your own training schools. When you do, I hope you have two courses chiefly, one for doctors of medicine, teaching an extensive system of exact technical procedures, gained and verified by work done and by observations made concerning the various physical modalities. This will be a course giving the physician the physiology behind his therapy, as he once learned drugs and their action in pharmacology. The second course should be one for technicians, auxiliary to the major course and similar to it in many points.

Last but not least, eventually you can do untold good by supporting and upholding ethical honest manufacturers and distributors, and denouncing the scamps. Only does an actor or actress know better probably than the doctor, the fickleness of the public, and you must protect them. They have been known to buy gold bricks and even city halls.

In conclusion, let me reiterate one or two things. I come not to tell you how to go about your business, but to tell you how I, from without your circle, see the situation. I am fully cognizant of your purposes and the great extent to which you have already carried them out. I am very much aware of the tremendous good you have done, both for the cause as a whole and for registration and protection of your members. Being aware of all this, I have tried only to mention those things which to me, a practising physician and defender of physiotherapy, seem to need emergency treatment. You're representing the oldest form of treatment known to man and it's only because of the frailties of human nature with its desire to seek the new and discard the old that we should ever have to be on the defense. But as long as there is freedom of any sort, every profession has to raise the bridge over the moat to defend itself from itinerant and irresponsible attackers. You may be assured that whether or not the spoken word from the medical profession issues forth, we do appreciate your activities. You should be very happy in the sacrifice of time you give to the furtherance of educational work, because there is always joy in accomplishment.

It would do well to keep in mind the early struggles of those who justly bore and earned the title of "pioneers" in physiotherapy. Faith in their knowledge and patience was their only recourse. Think occasionally of the thorough work of men like Apostoli, of Monell, of Jacoby, Da Costa, Jackson, Shepperegell and Ohman-Dumesnil with no reward but their own fulfilled faith. You have the rare privilege of carrying on the painstaking efforts of Priessnitz, Winternitz, Barauch, Kellogg, Pope, Hare, Luke, Massey and many others, all noble teachers, with contributions of decided progress to the scientific development and classification of this work. Be reminded often of the words of John J. Abel, who wrote, "Far greater even than the greatest discovery is to keep open the way to future discoveries."

I am very grateful to you for this opportunity of bringing this situation before you and I sincerely hope that you will appreciate my motive. Do not place me in the category of Alphonse the Tenth of Castile, who remarked that had he been present at creation, he could have given the Lord some very useful hints as to the better ordering of the universe.

Passive Motion—Its Place in the Treatment of Stiffened Joints

E. W. Cleary, M. D., San Francisco, Calif.

Read before the Northern California Association of Physiotherapists

Passive motion of a joint is any motion in the joint accomplished by exertion of a force other than active contraction of the muscle elements normally controlling that joint.

It is apparent therefore that the term passive motion covers a wide variety of procedures. These range from the purely manipulative or mechanical movements of an entirely paralyzed joint to the assisted active movements of a joint whose natural muscle motors are functioning nearly, but not quite up to normal range. Again, passive motion ranges from the abrupt and radical breaking of adhesions under anaesthesia to the gentle and gradual stretching of tissue, brought about by a weight placed over the hot pack to sag, for instance, a stiffened shoulder, during treatment.

Passive motion also results from the stretching strain of the body weight upon joints of the upper limb in hanging by the hands or the recurrent strain upon the joints of the lower limbs and spinal column in standing or walking.

It is inevitable that a medium of such potent and widespread usefulness should occasionally be subject to misapplication and abuse. Ill-advised violence on the one hand and hesitant timidity on the other, with a certain type of perfunctory routinism, in treatment, somewhere in between, have each contributed a share toward the discrediting of passive motion.

In no other field has passive motion flourished more indiscriminately than in the treatment of our greatest aggregation of joints—the spinal column. Complete cults of healing have been founded upon nothing more nor less than passive motion to the spine. Like the ancestors of the pugnacious O'Briens who "niver sprung *from* nobody, but always sprung *at* thim," these cultists sprung at and upon the human spine with enthusiastic abandon, and sometimes with fearful results.

Nevertheless, passive motion of the spine administered with proper skill and caution to cases of stiff and painful back, selected with due regard for scientific fact and accuracy of diagnosis, is a very potent measure of relief.

No other means utilized by physiotherapists calls for more patience, more intelligence and more inspiring personality on the part of the technician, than passive motion.

Patience is required even in the manipulation of joints under complete anaesthesia. Stretched soft tissues will tear disastrously and cartilage and cancellous bone acting as a fulcrum undergo damaging distortion from too abrupt manipulation, where the same range of movement may be accomplished by slow progressive advance without serious damage.

It is not the purpose of this paper to consider manipulation under anaesthesia further than to recognize such procedures as a form of physiotherapeutic passive motion subject to the same general rules for successful application, and the same possibilities of abuse as the less radical forms of passive motion commonly employed by technicians.

To the successful employment of passive motion preparation is most important. Preparation applies to the environment, the technician, the patient, and the joint or joints to be cared for. Treatment rooms should be warm, well-lighted, well-ventilated, comfortably heated, quiet and spacious. The arrangement should avoid treatment of one patient under the observation of other patients.

Every effort should be made to place the patient in such a position reclining, sitting or standing, as will help him to relax and become easily pliable under the technician's hands. The patient's position must be secure as well as comfortable. He must feel that no sudden shifting of his balance by yielding of any support may bring a severe, unexpected strain upon his injured limb.

The technician should cultivate in herself the habit of appearing sure and confident, avoiding all appearance of haste. She should so concentrate her attention upon the treatment that the patient instinctively feels that she knows just what she is about. Her hands should be warm and smooth and when she takes hold of the limb to be treated, she should have placed herself in a position of mechanical advantage, such that neither fatigue nor poor balance may interfere with perfect control of her own body during the manipulation. Muscle spasm resulting from fear may block every effort where the patient lacks confidence in the sureness of the technician.

To demonstrate the value of these preliminary preparations, one has only to try off-hand to manipulate a stiff, painful shoulder, for instance, with the patient standing unsupported in the middle of the room and compare the result with that gotten with the same patient lying comfortably on a plinth, the technician standing back of the patient's head, with his body steadied against the end of the plinth.

The technician's hands should be warm and smooth and she should, in passive motions, strive to so grasp the limb under treatment that the very sureness and firmness of her grasp engenders confidence and helps the patient to relax, overcoming the initial muscle spasm.

Getting acquainted with the patient as well as with his injured members is the first business of the technician, where passive motion is to be given. Rarely, if ever, should an actual increase in range of motion be expected during the first treatments. Every patient is, to some extent, a law to himself. Not until the technician is sure she has gotten him by the fear of the unknown and the new in his situation should she attempt vigorous measures.

The limb or joint to be treated should be prepared by preliminary heating. Either moist or dry heat may be used. I prefer moist heat in the form of whirlpool bath or hot packs. When the tissues have become well relaxed, softened and suffused with blood, then after gentle massage and a number of repeated movements within the range of easy motion, the joint should be stretched just once to the point where pain becomes severe enough to cause the patient to complain and to resist. At this point, the joint should be held while one can count five slowly. This procedure must, of course, be varied to suit the individual case. Reaction to pain and muscular resistance differ as do the patients. The technician has to study each case and advance the scope of treatment according to her observations.

I do not approve of repeated stretchings at a single treatment, with movement of the joint through the range of free motion between each stretching. This savors of the old pump handle method, which was usually both cruel and inefficient. However, a valuable variation of the single progressive stretchings without relaxation may sometimes be made by releasing the strain upon the joint momentarily, just enough to relieve pain, and without more than the small movement necessary to get this effect, again stretching to the limit and holding for the count of five. This may be repeated four or five times if the technician observes that a little gain is being made each time and the evidence of painful reaction is not markedly intensified. Much passive motion treatment is accomplished by mechanical appliances under the control of the patient, by weights and action of gravity on the limb itself, by postural stretching, rubber band traction, etc.

One of the cleverest devices which I have recently seen employed is the use of two small automobile inner tubes, crossed over the patient's shoulders and hooked under the arches of his feet to increase flexion, in a case of restricted spinal motion and knee-joint flexion. A push of the feet was followed by an elastic recoil, which increased range of flexion. The so-called diamond splint, extensively used during the World War, to stretch stiff elbows in either direction, depends upon rubber band traction.

Three valuable criteria of the proper measures of passive motion, or stretching, are:

1. Visible and palpable swelling and discoloration after manipulation and persisting up to the time of the next treatment.
2. Increased pain and tenderness persisting up to the time of the next treatment.
3. Range of free motion possible at the beginning of the next treatment.

If there is definitely increased swelling or definite discoloration, if there is intensified soreness or decreased range of free motion at the time when the next treatment is to be given, the previous treatment has probably been too severe. Further treatment should be palliative only until the reaction has subsided. Then only should passive motion be undertaken again, and at that time with such caution as previous experience dictates.

Every technician is familiar with the phenomenon of sticking points in a stiff joint. Improvement may progress according to a regular curve up to a certain degree, and there the curve of progress flattens out, and indicates no gain for a number of successive treatments. This situation should not discourage one. The vigor of treatments should be gradually increased as long as subsequent reaction does not become severe or cumulative Often such a joint will again, after two or three weeks show a rapid improvement. Sometimes temporary cessation of aggressive measures and an interval of merely palliative treatment by heat and massage will be followed by a decided gain.

Records are nowhere more essential than in the following of patients under passive motion treatments. In the beginning, very complete details should be set down. These should include not only graphs and recorded measurements of range of motion, but in addition, wherever practicable, dynamometric tests of strength of motion. Standardized circumferential measurements of muscle-groups controlling joints under treatment should be a part of the record. Circumferential measurements of the joint itself give accurate comparative data as to swelling, effusion, edema or thickening of periarticular tissues.

Patients requiring passive motion may be divided into three great groups, according to the etiology of their joint limitations. One thinks first of the traumatic group, then there is the great group whose joint infirmities are the result of disease, uncomplicated by trauma, and last the still greater group of habit contractures and postural joint disorders, many of which are so severe and crippling that chronic bad posture has indeed taken on the characteristics of a disease.

Considering the two great groups of traumatic and diseased joints, we have immediately the question when, after the incidence of trauma or during the course of disease, should passive motion be begun. For traumatic cases, the treatment should begin just as soon as it will not interfere with the primary healing of torn and wounded tissues. It is obvious that stretching motions should not be made upon an area complicated by a skin wound, the lips of which have been brought together, until the skin has had time to heal. This ordinarily takes from seven to fourteen days. We must realize that the deeper tissues, such as muscle, fascia, tendon and bone, take considerably longer.

It may be as long as five or six weeks before tendon or joint capsular injury has sufficiently repaired to permit passive motion safely, but as a rule our tendency is to wait too long. It is better to begin earlier and more gently and advance cautiously, literally and figuratively "feeling the way."

Post-traumatic arthritis is often the result of trauma to articulating cartilaginous surfaces and cartilage repairs very slowly. Passive motion uses the articulating cartilage covered joint surfaces as a fulcrum in stretch-periarticular tissues, and may thus seriously retard repair of already traumatized cartilage. Injudiciously severe passive manipulations may even be the initial cause of damaging compression of cartilage. This occurs too frequently in the manipulation of interphalangeal and metacarpo-phalangeal joints. In these delicate joint engines, the bony and cartilaginous elements are so small and the contracting periarticular tissues may be so strong and dense that when severe passive manipulations are done, actual compression of the cancellous bone and flaking-off of cartilage may result. One sees at times a definite traumatic arthritis of finger joints from manipulations of a joint which was relatively remote from the actual field of injury.

Of all the larger joints, the elbow has to be passively manipulated with the greatest caution. We are all familiar with the unfortunate picture of the masses of periarticular callus and even the ossifying myositis which sometimes develop from too violent or ill-timed passive motion of an elbow.

Passive motion has little, if any, place in the treatment of acute arthritis resulting from disease. It is true that vigorous manipulation of an acute arthritic joint may repay the sufferer for the agonizing pain caused by the treatment, by a singularly rapid subsidence of inflammatory symptoms, thereafter, but such a beneficial result is too uncertain to justify the practice. The time for passive motion for such patients is after the acute reaction has subsided; then only after active motion has reached its limit and the general picture presents a reasonable hope for gain by more radical treatment.

The value of passive motion in preventing or correcting contractures after infantile paralysis is well recognized. One could wish that in these cases the measure were used more frequently for prevention and therefore needed less for correction.

The gaunt and unlovely spectre of postural distortion which stalks so-called civilized man often rises out of the soft beds upon which he lies. It may be engendered by the lazy or unbalanced muscular activity with which he

carries on, or in another type of individual, the intense nervous strain under which he labors to accumulate dollars. The high strung business executive crouching at his desk all day may pride himself that he is not getting soft and flabby and yet may arrive at such a state of muscular balance that passive motion may be necessary to stretch his shortened ham-strings, calves and erector spinae muscles. And madame with her absurd and monstrous high-heeled shoes creates her own peculiar brand of contractures, which often require passive motion for their relief.

Postural deformities are nearly, if not all, instances of the development of pathological conditions so severe as to demand passive motion for correction in individuals whose active muscular effort would, if properly directed and sustained, either have prevented deformity or accomplished its correction.

Thus, the study of postural defects shows us clearly that passive motion is closely linked with normal muscular activity and that passive stresses and strains occurring during the individual's normal routine help to keep the body fit. Passive motion properly administered by the physiotherapist is then but an extension of the normal physical experience of the individual. The technician lends her strength that her patient may regain the function which it is beyond the power of his unaided muscles to recover.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The PHYSIOTHERAPY REVIEW, published bi-monthly at Mount Morris, Ill., for October 1, 1929.

State of Illinois } ss.
County of Cook }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Gertrude Beard, who, having been duly sworn according to law, deposes and says that she is the General Manager of the PHYSIOTHERAPY REVIEW and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of— *Post office address—*

Publisher, Kable Brothers Company, Mount Morris, Ill.

Editor, Dorothea M. Beck, Montclair, N. J.

Managing Editor, Dorothea M. Beck, Montclair, N. J.

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American Physiotherapy Association.

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GERTRUDE BEARD,
General Manager.

Sworn to and subscribed before me this 2nd day of Oct., 1929.

ERNEST R. SNYDER,
(SEAL.) Notary Public.

(My commission expires March 26, 1932.)

Ductless Gland Disease—The Role of Physiotherapy in Its Treatment

H. Lisser, A. B., M. D., San Francisco, Calif.

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It is well to remind ourselves occasionally that the first duty and privilege of every practicing physician is to relieve suffering. It should be our earnest endeavor always "to make the patient feel better," if it is within our power to do so, and quite irrespective of whether this alleviation of symptoms results in a cure of the underlying disease or not. The patient seeks the physician in order to receive treatment that will result in his feeling better; he is only secondarily interested in what is the matter with him.

It is, of course, axiomatic that intelligent treatment must be predicated on accurate diagnosis. The trouble with many of us is that we practice scientific diagnosis most elaborately, with all manner of impressive tests and appliances (many of which, by the way, are quite unnecessary for the case at hand), but a similar elaborate attack on the disease so gloriously labeled is frequently spurned or ignored because, forsooth, the therapy is not sufficiently and scientifically specific to satisfy our critical taste in therapeutics. We do not make the mistake of placing the cart before the horse, but the diagnostic horse too often trots off proudly, head erect, trailing an empty treatment cart behind. The tidal wave of therapeutic nihilism and lofty scepticism that has swept over the medical profession during the last half century may have cleaned out much rubbish, but it has left precious little in which we can retain scientific confidences so that many of the most learned and highly educated among us are hardly fit to practice the healing art.

This purging of the therapeutic stables has been largely confined, however, to old-fashioned drug therapy, but we must not be blind to the fact that operative therapy, chemotherapy, serotherapy and organotherapy have swept in with banners flying to take its place. Glandular therapy has become the latest therapeutic football to be kicked about between idolatrous worshippers and intolerant cynics. Amidst all this therapeutic novelty, at once acclaimed and scorned, Physiotherapy, of ancient heritage, has been quietly ignored or forgotten except by the few who have learned to appreciate its benefits. It is not only justifiable but positively incumbent upon us to utilize all modes of treatment that may stimulate, comfort, soothe or energize, provided only that none of these measures do actual harm. Physiotherapy, including massage, gymnastics, hydrotherapy, heliotherapy and electrotherapy, provides a varied and resourceful therapeutic armament that should not be neglected.

What is its field of usefulness in the treatment of ductless gland disease? The answer to this query depends on how sharply we restrict the term endocrinopathy. Some would include only a few diseases of glaring, unimpeachable character, such as myxedema, adenomatous goiter (toxic and non-toxic), Graves' disease, Addison's disease, Froehlich's syndrome, acromegaly, eunuchism, tetany and diabetes mellitus. These disease pictures are diagnosed ordinarily, when symptoms and signs are staringly obvious. By that time lack of hormones or excess of hormones has become so pronounced that powerful remedies are absolutely obligatory. We must supplement for lack of function by such extracts as thyroid and insulin, and we must resort to surgery to excise excess. The role of Physiotherapy in any and all of the above syndromes is but a minor one, but not to be ignored.

Thus Frederick Allen has stressed the importance and benefit to be derived from restricted exercise in mild cases of diabetes, especially in those that tend to be obese. Muscular exercise bears a relation to the diet, and burning up part of the foodstuffs tends to reduce blood sugar and increase the tolerance, in all but the severest grades of diabetes. The latter group are, however, made worse by exercise, because of the heightened metabolism or nervous influences, and they are better at rest. Graduated exercise under metabolic control is, therefore, a valuable detail in the management of diabetes. The paramount importance of an exact dietary regime, combined with insulin, should not blind us to all other measures that help in building up strength and resistance.

Many authors, among them George Dock and Nellis Foster, have given space to Physiotherapy in their consideration of the treatment of exophthalmic goiter. Skillful massage is the most useful means at our command to relieve restlessness. The massage should be superficial, not deep, and it is not a substitute for exercise; successful treatment leaves the patient in a state of comfortable relaxation, a consummation that is most desirable in these high-strung, hyperemotional individuals. Hot or cold packs and alcohol rubs are beneficial in promoting sleep at night. These measures are essential to a well-conducted rest cure, which should never be neglected preliminary to operation and subsequently also. The damaged circulation is aided by thyroidectomy, lugolization and digitalization primarily, but proper rest and later graduated exercises should not be forgotten. Electrotherapy in the form of galvanic, faradic, static, high frequency and autocondensation has been recommended, though the element of suggestion probably plays a large part in the benefit derived. We need not, however, relegate this formidable weapon of suggestion to the various cults.

In status thymicolylymphaticus, exercises directed to chest expansion may provide more room in the thoracic cavity for an enlarged thymus, and thus relieve pressure on trachea and aorta.

If the above measures constituted all that could be expected from Physiotherapy in ductless gland disease, a paper on this subject would hardly be warranted. But a much broader horizon is unfolded, if we consider the role of the endocrine system in the building, formation and maintenance of the total constitution. Wunderlich distinguishes a strong, an irritable and a lax constitution. Falta likewise groups individuals into those with stabile, debile, and labile constitutions, and this distinguished authority remarks on the frequency with which there will be found a correspondingly stabile, debile or labile ductless glandular component. My own experience with abdominal endocrine types leads me to link up emotional reaction with skeletal make-up, not invariably, but with sufficient frequency as to justify a broad classification into the undernourished asthenic and the sluggish obese.

In both these groups there are abundant indications and applications for various Physiotherapeutic procedures.

The debile vegetative nervous system, under the demands that life makes on the organism, results in an undernourished, constipated, enteroptotic asthenic, "readily accessible to irritations," with a tendency to so-called neurasthenia, hysteria and vasomotor trophic neuroses, and a poor resistance to infections. The exact endocrine analysis of this large group of patients (mostly females) is often extremely difficult, if not largely speculative. These unfortunate "weak sisters" wander from gastroenterologist to orthopedist, from otorhinolarynologist to endocrinologist, from gynecologist to psychiatrist. Rarely are they fundamentally helped by any one of these skillful specialists, if the tinkering be confined to one specialty at a time; whereas a collective group attack from the wider outlook of the constitution as a whole, by diet, eradication of infectious foci, organotherapy and supervised expert Physiotherapy, can ofttimes work a most surprising transformation.

Postural training, breathing exercises, cocoa butter massage, passive and active resistance movements, graduated gymnastics, quartz lamp pigmentation, contrast showers, needle spray and Scotch douche—all have their place in this regime. Amazing indeed is the seeming miracle that moulds a slumped, slender, hypotensive and exhausted organism into a well-knit, compact, balanced body with mental and emotional poise and equilibrium and twenty pounds gain in weight. It requires infinite patience, and is not always successful (mighty little in medical therapeutics is guaranteeable), but it can sometimes be done and it is worth while trying. You can take a horse to water but you cannot make him drink. You can serve the most appetizing dishes that would satisfy the most fastidious, but you cannot make the asthenic eat—not until you have stimulated a desire to eat, and Physiotherapy is an excellent aid in this direction.

I have in a recent paper commented on the endocrine aspects of endogenous obesity and emphasized its characteristics in children. The average boy or girl consumes astonishing quantities of food without the least inclination to obesity. Their metabolic hormonic reserves are amply able to cope with their caloric demands. Their physical activity is prodigious, as exemplified by youthful exurberance in all manner of play and sport. If their inheritance has been fortunate and they escape accident or serious disease, especially endocrine impairment, they progress into adult stability, possessing an "enviable equilibrium of their vegetative functions, their metabolism and their psyche." Contrast herewith the apathetic, sluggish, pudgy boy or girl who exercises from chair to chair, or the slender, frail asthenic whose physical and emotional activities are meagre, feeble and speedily exhausted.

The fat boy or girl and the fat man or woman, whether their obesity be purely exogenous or endogenous or both endogenous and exogenous, require not only diet, but also exercise; the part of glandular therapy in the regime has been referred to in a previous paper. How should they be exercised, how should their bodies be handled? You can equip a gymnasium for them, broadcast the daily dozen, hire a horse, or enter them in a golf club, but you cannot make them utilize these opportunities, for they rarely have sufficient will power at first to carry through a program of exercise that is constitutionally obnoxious to them. They must be systematically willed to exercise by trained supervision, taught how, and made fit for exercise. Many of them are in no condition to embark on a gymnastic spree, even if they possess sufficient will power to begin of their own accord.

No busy physician has the time and few have the equipment or training to supervise this work properly. It demands the service and experience and cooperation of an expert. It is not only necessary to enlist the Physiotherapist's aid for those who would not exercise otherwise, but also wise to have their assistance and judgment in guiding those who are willing or could be encouraged to exercise on their own account. Homemade amateur results are rarely satisfactory because the patient either works half-heartedly, does not persist and quits, or launches into the new enterprise so boldly and prematurely that actual harm results. A constitution that is already strained must be initiated gently and guardedly, instead of crudely and abruptly. One would not knowingly recommend uncensored exercise to a patient with damaged heart or arteries. Nor should one be careless with the endocrine obese or asthenic.

It is surprising and gratifying to witness the increased stamina and exercise capacity under a carefully graduated regime, and there need be no fear of heart strain if the Physiotherapist is watchful and if the physician cooperates in the supervision. It is an immense advantage to have the Physiotherapist's workshop and the doctor's office in the same building. This provides opportunity for the physician to watch the patient before, during and after exercise, sweat or shower, as occasion requires. He can satisfy himself as to the pulse rate, heart sounds and blood pressure under working conditions.

In this discussion of constitutional types I do not wish to be understood as ascribing an exclusively endocrine origin to asthenia or obesity. These are complicated conditions for which many factors are responsible. The endocrine organs are participants and are involved, together with the autonomic nervous system and other noendocrine organs. At present more headway can be made in their treatment by a judicious combination of stimulating glandular therapy, dietary regimes and Physiotherapeutic procedures, than by any one of these measures alone.

It is hoped that these remarks will serve to direct more attention to the usefulness of Physiotherapy in conjunction with glandular therapy in the treatment of abnormal constitution, and will encourage others to apply these beneficial methods. Thyroid extract as a tonic is probably more potent and sensible than iron, quinine and strychnine, and if properly used and controlled need not worry physician or patient. Physiotherapy, likewise, if properly applied, is a tonic of excellent worth. The repeated admonitions to beware of thyroid as dangerous, and to beware of exercise in asthenics and obese people, should be reserved for those who do not know how to use either. No agent capable of doing good is harmless, if unwisely used. This applies to surgery as well as to drugs. Only impotent remedies are harmless.

Physiotherapy in Relation to Diseases of the Skin

Harry E. Alderson, M. D., Clinical Professor of Medicine, Stanford University Medical School (Dermatology), San Francisco, Calif.

Read before the Northern California Association of Physiotherapists

In considering any form of therapy applied to skin diseases, one must remember that the skin is an enormous organ with very extensive nerve, blood and lymph supply. Through these connections it may be profoundly influenced by bodily disturbances. Reversely, various impulses transmitted through stimulation or injury to the skin may have very definite effects on the internal organs. While there are, in one sense, strictly local dermatoses (for example, warts, callosities, epitheliomata, etc.) and local treatment alone may suffice to destroy them, often underlying bodily conditions are factors requiring careful consideration. A very large number of dermatoses are purely symptomatic; that is, they are skin reactions due to some internal disturbances. They may be other organic effects and symptoms that are of paramount importance but the skin lesions can be seen; they may itch, burn or be painful and assume undue importance in the mind of the patient. Only too often the physician may take this latter view and ignore more serious complications. Thus, an attack of boils may be treated entirely locally and a serious underlying diabetes mellitus overlooked. Or a case of acne may have a lot of light, x-ray and other physical therapy, and a serious anemia or thyroid disease ignored. Or multiple telangiectases may be treated with the electric needle and a causatic liver or splenic disease may be neglected. So we must never permit ourselves to look upon the skin as though it were a detached part of the body.

Any measures that improve the general condition of the patient will have a good effect upon the skin. There are various forms of Physiotherapy that are of very great value, but we have not time to discuss them now. Many a sufferer from some form of indigestion with a skin disease due to that cause has gotten rid of both his indigestion and his eruption by means of diet, systematic exercise, massage, baths and electro-therapy. There are some skin lesions that will disappear without local treatment when disturbances of metabolism are corrected. The medical treatment of systematic diseases like syphilis is so much more effective when auxiliary measures designed to build up resistance are carried out. We are finding baths and general ultarviolet treatments of great assistance in these cases. Likewise, the medical treatment of tuberculosis of the skin and other viscera is rendered more promptly effective when the patient's general condition is improved by means of Physiotherapy. Thus we depend upon general measures fully as much as we do upon our local therapy in dermatology and syphilology.

Time will permit only the brief discussion of auxiliary methods of treatment of a few commoner dermatoses.

Acne vulgaris: A disease of adolescence characterized by the appearance of pustules, papules and comedones, is influenced largely by internal factors. Thyroid, ovarian, testicular and other endocrine disturbances have to be considered carefully. Also anemia and gastrointestinal conditions may require attention. Medical and dietetic treatment are necessary here, but the tonic action of various physiotherapeutic procedures are of great assistance. Amongst these may be mentioned prominently baths, massage, exercises and various forms of electrotherapy. It must be remembered, however, that in massaging seborrheal skins, oily preparations may produce pustules. Locally, a great deal can be accomplished with ultraviolet light. It should be administered daily at first and as the skin becomes tanned and more resistant, the intervals may be increased. Reactions should be avoided, the aim being to gradually tan the skin. With the patients who do not develop pigmentation, this treatment is not so useful.

Alopecia areata: Symptomatic alopecia and other forms of baldness are benefited in various ways by Physiotherapy. Where there is no local disease of the scalp, stimulation of the local circulation and production of hyperaemia will bring more nourishment to the hair follicles. This can be accomplished best by use of the ultarviolet light and massage. Where the loss of hair is due to systemic toxemia, or to functional disturbances of the thyroid or other endocrine glands, medical or surgical treatment will be necessary, but massage, tonic baths or ultarviolet baths may be very helpful. Where there is a seborrheal condition or some other local crusting or scaling disease of the scalp, ultraviolet treatments along with suitable lotions or salves will be beneficial. Of course, the hair will have to be parted to permit the active rays to reach the scalp.

Carbuncle, furunculosis, erysipelas and other serious infections belong to the dermatologist or the surgeon. There are many dangerous possibilities here and furthermore there may be serious constitutional conditions underlying the same that require medical care. However, in convalescence Physiotherapy may be of great value in rapidly bringing the individual back to his normal state of health.

Epithelioma is mentioned in some Physiotherapy books as being amenable to ultraviolet and other forms of energy. It is hardly necessary to inform this audience that there is no scientific foundation for this claim. The principal cause of cancer is repeated irritation and stimulation will accelerate its growth. So half way measures are dangerous. Anything short of early and complete destruction is futile.

Angiomata are very satisfactorily eradicated by the Kromayer lamp or by the use of the endothermy apparatus, the electrocautery or electric needle attached to a galvanic battery. The choice of the agent naturally has to depend upon the size and location of the angioma. Spider naevi are satisfactorily destroyed by means of the microcautery or the electrocoagulation needle. In infancy vascular naevi respond very well to heavily filtered radium applications, repeated at long intervals.

Pigmented and hairy naevi do not always call for removal, but where they are being constantly irritated on account of the danger of malignant degeneration, they should be destroyed promptly and completely. Half way measures are quite dangerous. Complete surgical removal is best and this is usually possible. Black or bluish moles are potentially very dangerous. A small blue black mole, if irritated by treatment or otherwise, is apt

to develop into rapidly metastasizina fatal melanosarcoma. Often it is far better to leave them alone, taking care only to guard against irritation. Pale brownish hairy moles may be destroyed by means of the cautery knife, although various electrical and thermic means are successful. Hairy moles call for electric needle destruction of the hairs first unless they are to be extripated surgically. It is surprising how many people with rapidly appearing moles think that by their destruction the development of others will be prevented. Often it is very difficult to talk such persons out of their determination to have something done.

Hypertrichosis produces much distress in the minds of some victims. It must be remembered that sometimes excessive hair growth is a symptom of endocrine pathology. The suprarenal and ovarian functions may be greatly disturbed by organic changes in these glands. Endocrinotherapy may relieve this condition and the sexual disorders related thereto. The majority of cases, however, do not present any underlying pathology, but the individuals may be greatly distressed and insist upon having the hairs removed. Carefully performed electrolysis with a very fine bulbous pointed needle gives the best results. Only the coarser hairs should be removed. There are x-ray machines disguised under some other name used for wholesale depilation. Their use is dangerous for, many months, perhaps a year later, atrophy telangiectasis and other bad results of x-ray burns may appear. In some states the use of these depilating machines is prohibited by law. Where there is an abundant downy growth, sometimes bleaching by peroxide will render the same much less conspicuous and in time will tend to discourage further growth. Some individuals find the daily use of a fine pumice stone or paste most satisfactory. In time this will discourage the growth.

Burns of the third degree tend to heal slowly. Granulations that are sluggish may be stimulated and epithelial growth aided by means of ultraviolet treatments. Exposure to sun and air or the quartz or carbon lamps may be utilized. These same remarks may be applied to the local treatment of ulcers of various sorts.

Eczemas of various kinds are successfully treated by physiotherapy methods combined with internal and other external therapy (medical dietetic and applications of salves, powders or lotions). In some cases cellular activity may be inhibited by measured doses of the Rontgen Ray. In others, where the process is sluggish, stimulating local applications of the ultraviolet light will be beneficial. Sometimes improvement of the general state of nutrition brought about by light baths, massage and exercises will make the eczema more amenable to local treatment.

Purpura is a symptomatic condition characterized by small hemorrhages into the skin producing bluish spots which are very slowly absorbed. Judiciously administered general ultraviolet baths are often of value, bringing the blood platelet count to normal, increasing blood calcium and checking the hemorrhagic tendency.

Psoriasis often responds to ultraviolet light therapy but there are occasional cases where there is no improvement. There seems to be some change associated with pigment production that favors disappearance of the scaly plaques. All successful forms of treatment in this condition result in pigmentation (for example, arsenic administration, chrysarobin and other local applications). Lamp therapy should be applied to the entire body, regardless of the location of the lesions. Sometimes in addition, heavy doses of the ultraviolet light by means of the Kromayer lamp applied to obstinate individual lesions will act very well. Blistering doses may be necessary and sometimes are justified, but it must be remembered that occasionally new lesions will appear in the adjacent skin as a result of excessive irritation. General pigment stimulation may prevent this, however. The inhibitory effect of actimic light on psoriasis is seen in the rare occurrence of lesions on exposed parts (face and hands), the tendency to grow worse during months when there is the minimum amount of sunshine, the tendency to improve during the sunny summer months and the rare appearance of the disease in the tropics where there exists the maximum amount of sunlight. The local action of the ultraviolet light is a very important factor but there may be in addition systematic effects which bring about improvement in these psoriatics.

Tuberculosis of various organs is improved greatly by the systematic effects of actinic light, fresh air, rest and diet. This is particularly true where the disease involves the skin, the lesions being available for direct local applications in addition to the general systematic treatment. Tuberculous ulcers, tuberculous warts, lupus vulgaris and erythema induratum are all amenable to the local applications of the ultraviolet light, Rontgen Ray, and various drugs. In the case of these various skin tuberculides, the resistance of the patient already is fairly high and the tubercle bacillus may be of attenuated virulence. Therefore, any general measures that improve the patient's nutrition and resistance are of very great value. General application of the ultraviolet light will do this, as these rays increase the haemoglobin, raise the red cell and platelet count and improve metabolism. Applied directly to the lesions they may have a germicidal effect and stimulate normal cell growth. These effects of the ultraviolet rays are of great value in the treatment of a large number of dermatological conditions, but are particularly useful in tuberculosis.

There are many physiotherapeutic procedures useful in dermatology, but we have not the time to discuss them. The Rontgen Ray, radium, the high frequency, the galvanic current, baths, massage, exercise, etc., all are indispensable in our work. Only a few dermatoses have been mentioned, but it must be remembered that any forms of treatment that benefit the general health of the individual are of value, for the skin is just as dependent an organ as is the liver, intestines, or other structures and many of its diseases are only symptoms. The practice of dermatology is the practice of medicine with the application of special knowledge of the various dermatoses. The practice of medicine embraces the use of drugs, the knife and a great variety of physiotherapeutic procedures which in the right hands often are more useful than any other agents. In the wrong hands, impossible things may be attempted, extravagant claims made for these methods and great discredit may thus be brought upon the same. Your association stands for the same ideals as the medical profession and we welcome the opportunity to work with you. Medicine cannot get along without Physiotherapy and Physiotherapy cannot succeed without medicine.

Posture in Its Relation to Health—Etiology, Mechanics and Treatment of Faulty Posture

Dr. H. H. Markel, San Francisco, Calif.

Read before the Northern California Association of Physiotherapists

I. Because posture in its relation to health is such a broad subject, and has already been dealt with in this meeting, it is my purpose to speak especially of the etiology, mechanics and treatment of the faulty posture.

In the assumption of the vertical position by man from the horizontal posture of the lower animals, the force of gravity affected the bony framework and the various organs of the body in a very different manner from formerly, for manifestly it is much more difficult to maintain an erect position of the body than a horizontal one. The spine soon assumed a primary curve and secondary and compensatory curves followed, all resulting in a different muscle and ligamentous pull and the skull became balanced upon the end of the spine.

Because the spine which mainly supported the body in this upright posture is far behind the center of gravity, there followed a dropping of the chest and its contained organs settled downward inside of it upon the diaphragm. The abdomen, too, filled with far heavier organs, sags, these organs descend and strain is thrown on their attachments. This causes a certain amount of predisposition or liability to certain postured defects. There is, however, a considerable degree of adaptability in the reaction of the body and the normal human posture resulted.

II. In the normal posture a perpendicular line would pass through the mastoid process, the acromion, the greater trochanter and the external malleolus. The head is balanced upon the end of the vertebral column, the chest is held well up by the fascia of the neck, the sternum is tilted forward, and the diaphragm is raised so that heart and lung action is free. The abdominal wall is firm and flat and the shape of the abdominal cavity, according to Williams, resembles that of an inverted pear, large and round at the top and small below.

III. This upright position is maintained largely by the ligamentum nuchae in the neck, by the para and intervertebral ligaments in the back, in the standing position. The hips are locked in full extension by the "Y" ligament of Bigelow and the knees are locked in extension by the crucial and lateral ligaments of the knee joint; while there is a twisting of the tibiae and an everting of the feet, thus putting the bulk of the strain upon the ligaments which neither tire nor stretch. The remainder of the balancing power necessary is supplied by the tone of antagonistic muscle groups.

Faulty posture is composed of most or all of the following faulty positions: Chest flat, head carried forward, shoulders forward, scapulae separated and edges prominent, normal thoracic curve increased, the lumbar curve exaggerated. The sacrum more horizontal, the thighs flexed and internally rotated feet pronated, many with short contracted Tendo Achilles; the upper abdomen flat, the lower abdomen protruding and sagged—again quoting Williams, the shape of the abdominal cavity assuming the shape of a pear, small and narrow at the top and bulging at the bottom. This results in a typical fatigue curve, all muscle tone gone, gravity increases all the curves and the body is maintained almost entirely by ligaments; a typical "End of the Trail" posture.

IV. Causes of faulty posture are two-fold, acquired and congenital. First, to mention some of the acquired forms: Scoliosis form poliomylitis, or resection of ribs after empyuna, or by a short leg due to hip disease, separation of the epiplysis or fracture knock knees, bow legs, flat feet and long rounder curve of spine due to Rickets. Other causes of scoliosis seem practically only in school girls, who prefer to sit and sew or read all humped over forward or to one side so that the girls outnumber the boys in these cases eight to one. Some congenital causes of faulty posture are torticollis, wedging of vertebrae, supernumerary ribs, congenital short leg. But by far the greatest number of faulty postures are found in the two classes of patients which Goldthwaite calls the herbivorous and the carnivorous types. In the carnivorous types the chest is flat, the costal angle is less than 45°. The thoracic curve is increased, the shoulders are carried forward, the lordosis in the lumbar region is much increased, the pelvis becomes more vertical and the sacrum more horizontal. The thighs and knees are flexed and the heels are raised. The type is slender, the bones are small, action is quick, the disposition is nervous. The herbivorous type is equally as well known: Broad backed and heavily built so that the symptoms referable to this type come from distortions due to the weight of the heavy body, which make their appearance less frequent in children but come in later life. The heavy abdomen causes backward leaning either at the hips or at the dorso-lumbar juncture. The sternum is high, the chest full and round, the costal angle is over 90° usually. The abdominal organs are heavy and cause a sagging of the abdomen with a great deal of backache. The bones of the body are heavy, there is a great deal of adipose tissue and the disposition is phlegmatic. These types are variations from the normal and the statics is inherited, as we know boys are like their mothers and girls like their fathers, so if the father is of the carnivorous type, the girls in his family are very liable to become enteroptotics, while the boys might escape, and vice versa. But if by chance both parents were of this type, the poor children have hardly a chance to escape. Fortunately, one parent usually is normal or nearly so, or possibly of the opposite type, an herbivorous individual, and a better type of posture results.

As noted, few children exhibiting the herbivorous type have symptoms except in the legs, bow legs, knock knees or flat feet, mostly from overweight. But the carnivorous type is cursed, endowed with a faulty posture to start with, due to loose ligaments. These children have "double jointed" thumbs, elbows, knees and fingers that hyperextend.

V. *Pathological conditions caused or complicated by faulty posture.* Some of these are dizziness, eye-strain, headaches. The tendency always is to keep the eyes level or at least to secure single vision. Dr. Lowman of Los Angeles in an article on the effect of faulty skeletal alignment upon the eyes, notes that in many cases that have disturbance of eye balance, have faulty posture and that correction of the latter very much relieved

the dizziness, headaches and other eye and ear symptoms. Vertical squint is often so existent with scoliosis, but which is cause and which is effect sometimes is hard to determine.

Torticollis, as we know, produces most extraordinary changes in the face. In a recent untreated case, a young man of 21 on one side of his face resembled a fourteen year old boy while the other was that of a man.

There is no doubt that scoliosis and flat chest and round shoulders cause marked interference with the proper action of the heart and consequent slower movement of the blood stream results; also, there is interference with the proper action of the lungs, with consequent lack of proper aeration of the blood. In a normal heart or lungs these restrictions might not be serious, but it might be a very grave matter for a heart with a leaking valve or a lung partly fibrosed.

In the abdomen other serious disturbances of function occur. Brown and Talbot have shown that cyclic vomiting has been relieved by proper measures. Goldthwaite has seen sugar disappear from the urine by correcting the posture alone; no doubt by securing better blood supply to the pancreas, or better drainage from it.

Periodic gastro-intestinal upsets many times can be traced to drag on the ligaments of stomach and intestines and pressure on the sympathetic ganglia which also is very frequently the cause of constipation, with chronic appendicitis and hemorrhoids following close behind.

VI. Kidney complications are very frequent. Ureteral kinks with consequent hydronephrosis and attacks of kidney colic are not particularly common in children, but they are very common in adults of this enteroptotic type, and if proper treatment were begun in childhood much future trouble would be avoided. Orthostatic albuminuria is a very common accompaniment of the carnivorous type in the child. Practically every one of these children is under weight and will not gain. In the out-patient departments of pediatrics and orthopedic surgery at the University of California during the past two years, Dr. Alfred Meyers and myself have examined and treated a large number of these cases, every one an enteroptotic with a big lordosis and sagging abdomen. Always at least a trace of albumin in the urine without casts, and the albumin may be stopped in a few minutes by obliterating lordosis, or produced in a few minutes by restoring lordosis. We found that plaster jackets put on with the patient lying on a hammock, obliterating the lumbar curve, stopped the albumin. These jackets were made removable and later replaced by braces and combined with exercises. Immediately these children began to gain in weight and appearance, which they did not do upon special diet alone before. Cases, too, of failure to gain—general malnutrition without albuminuria—were proved to gain as soon as their faulty postures were corrected. These cases represent vicious circles, and the easiest place to break into the circle is to treat the faulty posture and then the charm is broken.

Varicose veins of scrotum, pelvis and legs, true, are uncommon in the child but undoubtedly would be prevented later in life by proper attention to posture in childhood. Menstrual disorders at puberty would be less troublesome by the same sort of treatment.

LIST OF PHYSIOTHERAPY SCHOOLS APPROVED BY THE AMERICAN PHYSIOTHERAPY ASSOCIATION, JANUARY, 1928

The New Haven School of Physiotherapy, 303 Whitney Ave., New Haven, Conn., Harry Eaton Stewart, M. D.

Philadelphia Orthopedic Hospital, 17th and Summer Sts., Philadelphia, Pa., Miss Jane M. Farrell.

Children's Hospital, Sunset and Vermont Aves., Los Angeles, Calif., Miss L. H. Graham.

Northwestern Medical School, 303 East Chicago Ave., Chicago, Ill., John S. Coulter, M. D.

Harvard Medical School, Longwood Ave., Boston, Mass. (Post Graduate Courses), Course No. 441, Miss Janet B. Merrill; Course No. 442, Miss Mary McMillan.

Battle Creek Sanitarium, Battle Creek, Mich. (Post Graduate Course), Mrs. Mary Staines Foy, R. N.

Walter Reed General Hospital, Washington, D. C., Miss Emma Vogel.

Tacoma General Hospital, Tacoma, Washington, Ruth C. Babb.

The Physical Therapist and the Postural Patient

Olive Robinson

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No physical therapist should be considered adequately trained who does not have a working knowledge of the mechanical anatomy, physiology, and psychology of the patient who presents a postural defect. Particularly is this knowledge essential to one who works with the orthopedist, pediatrist or gynecologist, for from these three specialists come most of our postural cases. Each year, however, sees a larger number being referred by the industrial surgeon, the obstetrician, the genito-urinary surgeon and the internist.

Predicting this, and given a patient who is referred to us in need of postural training, how shall we recognize his need? How shall we attack his problem? To answer these two questions is the purpose of this communication rather than to give in detail the plan of campaign which has been excellently presented by others. In the following summary is presented a method of attack:

COMPLAINTS

The commonest reasons for which patients come to us are:

(1) *Having Pain.*

(A) This is usually due to strain or arthritis of one or more of the weight-bearing joints; those most frequently affected by faulty stresses being:

(a) Tarsal and metatarsal joints ("foot strain," "fallen arches").

(b) Sacro-iliac joints ("sciatica" "hip pain").

(c) Lumbo-sacral joint ("low back ache," "anterior thigh and leg pain").

(d) Dorsolumbar joint ("lumbago," "kidney pain"), intercostal neuralgia.

(B) Pain may also be due solely to ligamentous or muscular strain. The commonest members of this type being:

(a) The calf or anterior tibial pain, associated with various foot imbalances.

(b) A large variety of painful abdominal disorders often attributed to, or at least commonly associated with ptosis.

(2) *Deformity.*

The number of these is legion. The most common ones will be reviewed under Examination. Any one of them may be the chief complaint.

(3) *Fatigue.*

This appears in the form of a general or local weakness.

(4) *No Complaint.*

Patient sent in by the school examiner or by the wide-awake physician who believes in practicing preventive medicine.

EXAMINATION

The physical examination should be given with the patient lying, sitting, standing and walking, and is meant to be supplementary to the referring physician's complete physical examination.

(1) *Inspection.*

From this should be determined:

(a) Anatomical type of the patient (as classified by Goldthwait)** whether herbivorous, carnivorous or normal. This is essential, for each type presents its own individual difficulties.

(b) The type of deformity: Look for the following most frequent causes, always beginning at the feet and working upward:

1. Pronated, varus or valgus feet.
2. Flexed or hyperextended knees.
3. Knock-knees or bow-legs.
4. Increased or decreased lumbar curve.
5. Protuberant abdomen.
6. Lists or scolioses.
7. Increased dorsal curve.
8. Flat chest.
9. Heavy or pendulous breasts.
10. Round shoulders, winged scapulae.
11. Forward head, increased cervical curve, torticollis.
12. Abnormal deposits of fat (e. g., a fatty hump over the cervicodorsal region).
13. Atrophy, hypertrophy or spasm of muscles.

(2) *Gait.*

Under this heading it should be noted that a hip deformity will often be the cause of postural imbalance and occasionally difficult to detect by inspection. A careful study of the gait is therefore equally as valuable as examination of the sitting and standing positions habitually assumed.

(3) *Manipulation.*

A routine should be adopted, again working from the ground upward, whereby the *active* mobility of the feet, knees, hips, lumbar and dorsal spine, ribs, shoulders, and neck may be briefly determined. *Active* mobility varies with the anatomical type, age and muscular coordination of the individual. One should reserve manipulation (which should always be gentle) for the determination of the amount of joint malformation, soft tissue contracture or muscular spasm present.

(4) *Mensuration.*

Always measure:

(a) The length of the legs from the anterior superior spine of the ilium to the tip of the internal malleolus, with the lower extremities placed in corresponding joint attitudes.

(b) The costal angle below the tip of the sternum
1. At rest and
2. At full inspiration.

(c) The chest expansion from a position of
1. Rest
2. Expiration and
3. Inspiration.

(d) The inclination of the pelvis, standing.

(Draw a straight line from the posterior superior spine to the anterior superior iliac spine of the same side and measure its angle of incidence with the plane of the floor.)

(5) *Estimation of Patient.*

From the foregoing one should be able to grade the patient's
1. Intelligence
2. Muscular coordination and
3. Cooperation.

(Grading may be done by numbers 1 to 4, 1 representing the highest rating.)

**"Anatomic and Mechanistic Conception of Disease," Joel E. Goldthwait, Boston Medical Journal, June 17, 1915.

(6) *Written Records.*

These should be brief and minutely accurate.

1. Chief complaint and possibly one or two minor complaints; e. g., "Pain in lower back." (Patient puts finger on lumbosacral junction.)
2. Anatomical type; e. g., normal, leaning toward the carnivorous.
3. Chief deformity (in order from the ground upward); e. g., pronated feet; increased lumbar, dorsal and cervical curves, protuberant abdomen, flat chest.
4. Limitation of joint mobility, or hyper-mobility if present by measured angles; e. g., active dorsiflexion of feet, 85 degrees.
5. Mensuration; e. g., legs measure equally. Costal angle, 30 degrees; 45 degrees. Chest, 2½ in. expansion. Inclination of pelvis, 55 degrees forward.
6. Estimation of patient; i. e., intelligence—1, coordination—3, cooperation—1.

The total examination should not take over one-half hour, if the habit of routine procedure is established, and only one complete examination is necessary, supplementary findings being added to the record from time to time in the form of "progress notes."

Let it not be considered that we advocate usurpation of the physician's prerogative—quite the contrary! To recognize the fundamental etiological factors involved in each case and to prescribe appropriate therapy designed to relieve, correct and finally eliminate them, must always remain the function of the physician; on the other hand, almost every physician, who because of confidence in our judgment and ability, is willing to allow us to treat his patient is also eager to delegate to us the details of therapeutic application. To such an extent is this true, that we frequently receive prescriptions for "foot exercises," or "back exercises" or simply "postural training." Unless then, we have a rational method of examination by which we shall be able to consider the patient as a whole, together with a permanent record to which we and the physician may refer in planning further treatment, we shall fall far short of the ideal of cooperation which the medical profession deserves from its physical therapists.

Now, with the written record before us, we are ready to formulate our plan of campaign; we have something tangible upon which to base our reasoning, something to which we can refer for help when progress does not seem satisfactory, or for the encouragement of our patients and ourselves when progress is good.

179 Allyn St., Hartford, Conn.

Book Review

Physical Therapeutic Technique. By Frank Butler Granger, A. B., M. D., Late Physician-in-Chief, Department of Physical Therapeutics, Boston City Hospital; Director of Physiotherapy, United States Army; Medical Counselor, United States Veterans Bureau; Member of Council on Physical Therapy, American Medical Association; Instructor of Physical Therapeutics, Harvard Medical School; Assistant Professor of Physical Therapy, Tufts Medical School; Past President American Academy of Physiotherapy. With a Foreword by William D. McFee, M. D., Boston, Mass. Cloth. Price, $6.50 net. Pp. 417, 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1929.

This is the kind of book one would expect from that kindly Dean of Physical Therapy, Dr. Frank Butler Granger. It is a simple and masterly resumé of the much-debated physical agents, with emphasis placed on ultra-violet rays and diathermy, but with the importance and value of massage, hydrotherapy, mechanotheraphy and muscle reeducation duly acknowledged.

The preface clearly states "this book has not been written for the specialist in Physical Therapy," and attention is therefore called to the chapters on "Electro-Physics," "Galvanic Current" and "The Electromagnetic Spectrum" as giving a concise and unconfused conception of these fundamentals. "An Outline Synopsis of Teaching Physical Therapy" (credit for which is given to Dr. Frank O. Davis) and "A Hospital Department of Physical Therapy" deal with two outstanding problems in this therapeutic field. The case treatments, offered in Dr. Granger's unassuming way, are as a visit to a clinic where valuable work is demonstrated and shared. No autocratic or dogmatic procedure is laid down, but one knows that the result of twenty-five years' experience is generously proffered to the serious student.

The illustrations of technique are clear, the print easily legible, and spacing so arranged to make this volume a valuable handbook and classic for the library on Physical Therapy.

Role of Physiotherapy After Apoplexy

William L. Bender, M. D., San Francisco, Calif.

Read before the Northern California Association of Physiotherapists

In the management of a patient who has had an apoplectic stroke, the physician must call into action several forms of treatment. These are best grouped under the headings of general care of the patient, diet, drugs and Physiotherapy. The most frequent result of a stroke, if the patient survives the first few days, is hemiplegia, and it is in this condition that we find physical treatment most useful.

THE STROKE

The onset is characteristically dramatic, usually due to a cerebral hemorrhage in an individual in the prime of life, oftentimes without his knowledge of any former circulatory trouble. He may fall unconscious, with complete loss of tone and muscle power on one side of the body, or both the coma and the paralysis may come on more gradually for a period of hours or even days. During this critical stage great care must be taken that treatment, though applied with the best intentions, does not jeopardize the patient's chances for recovery. Though at times bleeding and spinal puncture may be advisable in order to relieve intracranial pressure and further embarrassment to the cerebral circulation, it may be said in general that these measures are advisable only to relieve certain symptoms as they arrive. I feel that high frequency electricity to the head and similar procedures that have been advocated are not advisable. It is difficult to see how they would influence a hemorrhage deep in the brain, and I am quite sure the chances for harmful as well as for good results are equal.

PHYSIOTHERAPY OF HEMIPLEGIA

From the start, however, the basic principles of Physiotherapy should be applied. The unconscious patient should be moved carefully in order to prevent strain or injury to paralyzed extremities. Pillows or sand bags should support the affected shoulder, girdle and arm, the hand should be protected against the constant pull of gravity, and the foot should be held up at right angles to prevent toe drop. At first the paralysis is of a flaccid nature, the characteristic rigidity of muscles appearing gradually over a period of weeks. There is always some return of function, the amount of recovery varying chiefly with the extent of the lesion, and, as we should expect, the more highly developed the movement, the less completely it returns. For instance, the convalescent patient may be able to walk and move the affected arm and forearm, but be unable to grasp an object in his hand or to perform the finer movements, such as buttoning clothes or writing.

We must always keep in mind the fact that in treating a patient convalescing from a stroke, we are dealing with damage already done. The final result, after all, depends on how extensive the initial lesion was, and to what extent the nerve cells and fibers in the damaged part of the brain are able to take up their duty again. We have no way directly of increasing the amount or the speed of recovery of the affected area in the nervous system, but we are able to keep the affected parts of the body, particularly the muscles, in good condition to receive nerve impulses that may finally come through. It is in this field that Physiotherapy judiciously applied is useful. An additional help that the Physical Therapist brings forth is the interest that is generated in the patient in his own rehabilitation, and this depends directly on the individual giving the treatments. The attitude must be one of optimism without raising hopes unduly, to keep the patient interested in his recovery and cooperative in exercises, massage and whatever else is being done to give him back to some degree his usefulness. Too often the apoplectic victim who has been reduced in a moment from an active, productive existence to one of helpless invalidism becomes discouraged, disinterested, complaining, querulous, even objecting to any attempt to improve his condition which he has made up his mind is helpless. The Physiotherapist, with the advantage of daily treatment periods, has the opportunity to improve the morale and thereby alter the final outlook completely.

There are various forms of treatment which are to be taken up under separate headings.

Position. Support in the early stage of flaccid paralysis has been mentioned above. It is just as important throughout the spastic stage in order to prevent deformity. Strong flexor muscles must be balanced to protect the opposing extensors, and if this is neglected wrist drop and toe drop result. It may be necessary to dorsiflex the wrist or the foot by means of a splint or steel brace, in addition to the other measures.

Motion. Passive motions in the affected extremities should be begun within the first few days, but not until it is reasonably certain that the hemorrhage has subsided and brain involvement is not progressive, and not if manipulation excites a patient who is semi-conscious. Each joint should be put through its normal range of motion as completely as practicable. As the spastic stage comes on, this of course becomes progressively less possible, joint motions being prevented by rigid muscles. As voluntary motions appear, usually some weeks after the onset, first in the fingers and toes, the patient should be encouraged to win back his voluntary control of motion by active exercise. Though mental effort to send the impulse from the brain to the muscle group which is beginning to contract again probably does not hasten nerve recovery or increase the amount of it, it is justifiable in that it helps to reestablish the mechanism which makes the muscle obey the thought. It should be emphasized that long-continued forced effort on the part of the patient to establish some muscle action is more prone to be detrimental rather than beneficial. We must remember that the underlying cause of cerebral hemorrhage such as hypertension or arteriosclerosis still persists and that any disturbance of the patient's tranquility may predispose to another attack. Other expedients, such as moving joints against resistance, attempting to pick up small objects with fingers or toes, or the squeezing of a rubber ball, are all of value.

Massage should also be started early. Moderate though firm effleurage is the rule, and the object is to stimulate arterial, venous and lymphatic circulation in affected muscles and skin particularly.

Electricity. Both the faradic and the galvanic have been advocated to exercise muscles cut off from brain impulses. This is probably of some value in the early

flaccid stage, but later on serve only to stimulate the spastic muscles which are already hypertonic. I consider electrical excitations are inferior to the three types of treatment already described. Currents of high frequency, particularly the diathermy, are useful for relief of pain, which comes from tension on muscles and tendons from the weight of the extremities, and later on from contracture. For the same purpose radiant heat from incandescent bulb or the more recently popular infra-red lamp is also useful. Actinotherapy may serve some purpose in maintaining the general condition of the patient.

SUMMARY

While in the final analysis the amount of recovery from hemiplegia following a stroke depends chiefly on the extent of the brain hemorrhage, I feel that both Physiotherapist and physician accomplish something for the patient by intelligent application of the methods of treatment that are at hand. Though we may see a patient end up barely able to walk, with a spastic leg and a dragging toe, with a wasted arm and hand with very little movement due to contractures, I feel that even in such an unfavorable case we may have made the road a little smoother over the long period of disability by helping him adjust himself to his infirmity, helping him to develop the other side of the body to assume new duties, and by the relief of pain. In the more frequent milder cases, we undoubtedly accomplish a greater return of function than would otherwise have been the case, and every patient should have the advantage of this chance.

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What Is an Orthopedic Shoe? Norman D. Mattison, M. D. Amer. Jour. P. T., Aug., p. 199.

Voltage is Factor of Prime Importance in Administration of Diathermy

By Ann Kelley, R. N., Supervisor of Electrotherapy, The Mayo Clinic, Rochester, Minn.

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The primary function of diathermy is the generation of heat in deep living tissues. Electricity provides the only means of generating such heat because electricity can be made to pass through any part of the body. Diathermy is no more and no less than an improved method of employing heat as a therapeutic agent. The heat, in diathermy, is not produced in the electrodes, but in the tissues themselves. This is brought about by the expenditure of electrical energy in tissues on account of the resistance offered by them to the passage of current.

The bodily tissues, like all conductors, offer more or less resistance to the passage of electrical current, and the resistance of different tissues varies. The resistance of tissues of human beings to the flow of current is very hight as compared to the electrical conductivity of metals. One of the basic laws in the physics of electricity is that wherever a circut offers a high resistance to the flow of current, energy must be expended to force the current through, and that energy so used always manifests itself in the form of heat. In accordance with this law, it can be seen how heat is generated in the tissues, and that the heat so generated is proportional to the resistance of the circuit with a given amount of current. If the resistance of a circut remains constant, the heat that is generated is proportional to the square of the current.

To drive a given amount of current through a circuit having a given resistance, in order to generate a certain amount of heat, voltage becomes as important a factor as the current itself. This is a point that is overlooked in many instances in which diathermy is used. All high frequency machines are capable of delivering about an equal amount of current in milliamperes, but if the voltage is not high enough, this current is not driven through the tissues even though the meter indicates that apparently the current is passing through a circuit. The significant point to consider is whether or not a machine delivers voltage or penetrating power enough to send current through the tissues in order properly to subject them to diathermy.

In the use of high frequency currents, the greater the voltage, the greater the losses of electrical energy in the circuit through which the current is being forced. This is particularly true when tissues of human beings are placed between two highly charged electrodes that are connected with a source of high voltage, high frequency current. Since the generation of heat in the tissues means that energy from the apparatus must be transferred to the tissues in the form of heat, it follows that high voltage will cause more thorough distribution of energy, with its attendant loss of energy, than the curernt of low voltage. That is, the more effectively the current can be lost throughout the tissues, the more evenly distributed is the loss or absorption of energy, which manifests itself in the form of heat. With low voltage, the greater part of the energy is expended on the surface of the skin in an endeavor to overcome the high resistance. Consequently, there is an excessive amount of heat on the skin or surface and a minimal amount of internal heat, or practically none.

During the last five and a half years, or over the period of time during which diathermy has been used in The Mayo Clinic, the physician's final opinion in regard to the results of treatment in each case has been recorded, technic has been closely supervised, and a record has been kept of the type of diathermy machines used in giving the treatments. This experience with diathermy has proved the importance of sufficient voltage, which is referred to as high voltage, as compared with insufficient voltage, which is referred to as low voltage.

In order to use electricity for diathermy, it is necessary that the nature of the ordinarily available electrical current be changed from a direct, or slowly alternating current, to an alternating current of a frequency as high as one to two million cycles a second. The necessity for greatly increasing the rate of frequency of electrical currents that are to be used for treatment is to overcome electrical shock or disagreeable sensations that would otherwise result, due to severe contractions of muscles. The rate of change in polarity, or direction of flow, of a high frequency current is such that there can be no response of nerve or muscle and hence no sensation to the patient even though the current actually passes through the body.

In entering the field of high frequency currents, new characteristics are encountered. One of these is that the heating seems to affect the superficial tissues more than the deep tissues. This is due no doubt to a considerable extent to the "skin effect," a phenomenon of high frequency currents. This property of the current seems to be very pronounced at low voltage and seems to diminish as the voltage is increased. When the patient's tolerance is governed by the skin temperature, it can readily be seen that the lower the voltage, the less effective a high frequency current is for diathermy.

Reference to the output capacity of high frequency apparatus in terms of milliamperage only is not an index of the capacity of the equipment for use as an effective medium for administering diathermy. Similarly, milliamperage alone tells nothing regarding the dosage of diathermy that is being effectively applied.

Selective oscillation frequencies, or variable frequencies, have been referred to from time to time in the literature, but it is not clearly stated why a current of a particular frequency should be selected for treatment, by diathermy, of a particular part of the body. The purpose of diathermy is to generate heat, and as far as it is known the only therapeutic effects obtained are from the generation of heat. There are no known strictly electrical effects of high frequency currents, and, therefore, no particular advantage in selective frequencies, as long as the oscillating frequency is sufficiently high not to cause faradic or irritating effects. According to all known electrical laws, the amount of heat generated, or the degree of diathermic effect, is dependent on the amount of electrical power or energy expended in a circuit, depend-

ing on voltage, amperage and resistance, and is independent of frequency. Provided apparatus has ample penetrating power, the higher the frequency of oscillation, the smoother and more pleasant the effect of the current on the patient.

Every high frequency apparatus functions at maximal efficiency at a particular frequency which can be referred to as its point of resonance. A variation of either the capacity or inductance, or both, of the oscillatory circuits of a high frequency apparatus will cause a change in frequency and efficiency at the same time. It seems probable that changes in the output or the performance of some high frequency machines are being incorrectly attributed to frequency instead of to efficiency, since one varies with the other in a given machine. It appears that it would be more logical to consider what change has been made in general efficiency rather than in frequency.

A second factor in every high frequency apparatus is known as spark frequency in contradistinction to oscillation frequency. Spark frequency is the rate for each second at which condensers discharge, and it is dependent on the spark gap and the position of the primary current control. With a given setting of the primary current control the spark frequency will increase as the spark gap is closed and it will decrease as the gap is opened. With the gap fixed, the spark frequency will increase as the primary current is increased by advancing the primary control swith. The converse holds true, as the primary current is decreased. Each condenser discharge is made of a train of oscillations, which vibrate at a given frequency with each succeeding oscillation, diminishing in amplitude to zero. When this takes place, an interval of time elapses for the condensers to become charged to a point at which they will discharge again. During this period, current does not flow in the patient's circuit until the condensers have been charged by the transformer, when they again discharge, sending an oscillatory current through the circuits. For maximal efficiency, the rest period should be of as short duration as possible so as to cut the cooling-off period of the tissues to a minimum. However, since the spark gap also controls the voltage of the high frequency current that is being applied to the patient, it is necessary to employ a transformer of high voltage. Thus, when the gap is well opened, the condensers can be rapidly charged after each discharge. With a transformer of sufficient capacity, the spark frequency can be maintained and proper voltage obtained for diathermy.

The high frequency apparatus must be absolutely free from faradic or any other irritating properties. That is, it must deliver smooth and resonant current, and must not give rise to other sensations than that of a comfortable even heat. In order to accomplish this, the oscillation frequency of the current must be high, and the apparatus must be designed so that a faradic effect will not be produced when the gap is opened in order to increase the voltage. These increased frequencies make it more difficult for a current to traverse a circuit, yet these increased frequencies make for the ideal type of diathermy current to be used on patients. A low voltage apparatus with a high oscillation and spark frequency might deliver a very smooth current, but its penetrating powers would be practically nothing as regards the requirements for diathermy. The milliamperage concentration on the surface of the skin of the patient may be such as to produce marked surface heat similar to that of a hot water bottle or heating lamp. This explains why burns are fairly common when this type of apparatus is used. If the frequency is lowered, it will require less voltage to drive the same amount of current through the tissues, but this decreased frequency may be very undesirable and the end results in most cases would be such as to make the use of diathermy not worth while.

CONCLUSIONS

Voltage is a factor of prime importance in the administration of diathermy. It enables the current to be driven and its energy dissipated evenly throughout highly resistant, deep-seated tissues, and high voltage makes it possible to use a current of a frequency sufficiently high so that it will not have disagreeable or irritating properties.

Milliamperage considered alone is not a criterion of the efficiency of high frequency apparatus and cannot be considered the only factor by which dosages of diathermy can be estimated.

The only requisite of oscillation frequency is that it shall be high enough to warrant assurance that the current will be free of faradic or other irritating properties. The higher the oscillation frequency, the smoother the effect of the current on the patient. There is nothing to indicate that other than diathermic effects are to be obtained from high frequency currents; therefore, need is not evident for the use of currents of various rates of frequency for diathermic treatments of various parts of the body.

The spark frequency, when the spark gap is opened to a maximal operating position, should be maintained at a rate sufficient to prevent the tissues from cooling during the spark intervals and thereby neutralizing the diathermic function of the current.

Officers and Executive Committee of the American Physiotherapy Association, 1928-9

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EDITORIALS

The Contest

The REVIEW wishes to stimulate writing amongst our own members. Every one of us, whether we be in a great medical center such as Boston or New York or in some isolated spot, has some pet technique that we have successfully used on a series of cases, and the rest of us know nothing of it simply because we are too busy to work it up or it just has not occurred to us that it would be of interest to others.

Perhaps it is some orthopedic device; some equipment; some method of using that equipment; some original research work that is being carried on in your clinic that would be of great interest to all of us if we would get busy and put it in writing. Only by such an exchange of ideas and passing on of knowledge will we all derive from our association the benefits which such an organization should furnish to its each and every member.

In order to bring about such an admittedly desirable situation the REVIEW is offering the members of the members of the Americal Physiotherapy Association a contest.

1. Those eligible: All members of the American Physiotherapy Association in good standing, Mar. 1, 1930.
2. The subject: Any subject relating to Physiotherapy.
3. The date papers will be due: Mar. 1, 1930.
4. The judges: A jury of three interested doctors to be chosen by the executive committee and to be announced in the next REVIEW.
5. The prizes: $50.00 and a life membership to the American Physiotherapy Association; (2) a life membership to the American Physiotherapy Association; (3) honorable mention.

Conditions of the contest: All papers will be the property of the REVIEW and may be published at the editor's discretion.

It will be an interesting experiment to see what our members are doing; those who have not had the good fortune to be at the conventions will get a glimpse into what others are doing and how they are doing it. The field of Physiotherapy is so vast that many are the angles that we shall meet, and all the more interesting for that. Let us all enter into this contest, each member with the first prize in mind, and prove to each other the wide and varied interests of Physiotherapy.

HAZEL E. FURSCOTT.

The Portland Convention

The eighth annual convention of the American Physiotherapy Association was held in Portland, Ore., July 8, 9, 10, 11, 1929. The headquarters were at the Masonic Temple. The attention of the visitor was immediately held by the profusion of flowers with which the room was adorned. The flower-bedecked windows, corners, speakers' rostrum and tables sent forth a welcome to our visitors from our gracious Portland hosts. I had the good fortune to be present at the meeting held by the Portland Chapter a week before the convention, at which the innumerable details of the program were discussed. Nothing was forgotten. There was Miss Cora Howes, chairman in charge of the convention, and her army of workers. Each had his or her job. And each one was determined to make the machinery of the convention a smooth, well-oiled, working machine, so well assembled and coordinated that I'll wager few of us noticed at all that there was a machine behind it.

They had thought of everything. The tea was a social get-together—delicious and dainty. The ninety-seven guests, some old friends and coworkers, were busy gossiping (as one will, over a cup of tea) over their mutual experiences, meeting those to whom they had written letters but whom they had never met, greeting those of whom they had read in the REVIEW, making new acquaintances of those who had the same interests and outlook—a common bond to inspire both work and friendship. Mrs. Rice, charming as hostess, had planned the tea where we "got together" as one of the best reasons for our convention.

That army of workers, the Portland Chapter, had automobiles to take us to the clinics, to show us beautiful Portland and its famous Columbia River Highway. Mr. Wassel had charge of getting that excited, enthusiastic group into automobiles, to their destination and back again. I didn't envy him the job. There was always some one who wanted to stay behind to examine a little more carefully a beautiful whirlpool or to ask the speaker about some pet case where they might use the technique suggested in his paper. But Mr. Wassel was always patient and all of us got to the clinics and back again, and we saw Portland and all her beauties.

The printing under Mrs. Hardy, the publicity under Miss Applegate, the flowers under Mrs. Chadwick (the executive committee had fresh flowers in their rooms every day), the banquet under Miss Royce, the registration under Miss Babb, all meant hard work, but under the efficient guidance of Miss Howes and Miss Ewing (the president of the Portland Chapter and, by the way, the gracious toastmistress of the banquet), the machine, as I have said, was unnoticed; unnoticed because it was well planned, eagerly executed without friction, the sturdy foundation on which to build our successful week.

The minutes of the eighth annual convention will tell

in detail and regulation form the story of that week. The papers which were presented will be published in the REVIEW. I would like in my meager way to tell those of you who did not have the good fortune to be present of those things at which the minutes and the papers presented can only hint. Then, to return to the tea. Miss Ewing, president of the Portland Chapter, and I had the honor of serving. I am sure that I left most of the actual pouring to Miss Ewing, for the table was so tempting and I was so overwhelmed seeing my old friends and making new. Well, Miss Ewing amply made up for my deficiences.

That evening the first formal program was presented. Dr. Elmer C. Carlson, then an associate member of our association, now an honorary member and old friend, gave the address of welcome. He presented a picture of the old times at Reed College during the intensive war training, a picture that brought forth laughter and many tender memories to many members present. The first paper of the evening was by Dr. Harold Mayo F. Behneman of San Francisco. Dr. Behneman's paper on the "Role of Physiotherapy in the Practice of Medicine" was noteworthy for two things. First, his keen insight, vast appreciation and sympathetic understanding of Physical Therapy as an adjunct of medicine; second, a constructive program to make Physical Therapy a useful adjunct of medicine. When I say constructive, I mean it in every sense of the word. He gave us concrete ideas on how we, as an organized group of technicians, may attain this end.

When the program committee for the eighth annual convention planned the program, it attempted to get papers on the underlying scientific principles underlying the technique of Physiotherapy. It succeeded in obtaining an address from Dr. Charles Sheard of the Mayo Foundation. He presented lantern slides and an address on the "Physiological Effects of Radiant Energy on Animal and Plant Life." This is the sort of presentation conducive to thought, no preconceived notions or prejudices or empiricisms of what radiant energy will effect. Dr. Sheard told us of an experimental problem and left us with some cool, scientific facts that we may take or leave, apply or not in our practical methods. Such presentations inspire subsequent study, and as Dr. Sheard has promised to contribute to the REVIEW we all shall have the chance to know the work he is doing.

As I have said, all the papers will be in the REVIEW hence I shall not go further into the details of the splendid papers presented during the sessions. I would like to mention the interesting clinics at the Shriners Hospital for Crippled Children under the direction of Dr. Leo Lucas; at the Oregon State Accident Commission under Dr. C. R. McClure; and the visits to the U. S. Veterans Hospital and Doernbecker Children's Hospital. At these clinics we saw demonstrations, cases and equipment of great interest to all. Many of our own members presented papers and demonstrations worthy of note: Miss Sue Roen, a pool demonstration of exercises as well as a paper on "Exercises Following Spinal Fusion for Scoliosis," Miss D. Sorenson on the "Compensation Method in the Treatment of Scoliosis"; Miss Sarah Davis on "Body Mechanics"; Miss Lillie Tucker on "The After Care of Spastic Children"; Miss Martha Hindman on "Practical Operative Technique in Certain Electrical Treatments"; Miss Olive Robinson on "Posture." Miss Robinson's paper was published in the Journal of the American Medical Association.

One of the sessions of most interest was the round-table discussion on the educational program conducted by Miss Marguerite Irvine, chairman of the educational committee. As many of the graduates and teachers and directors of the existing schools were present, the discussion was indeed illuminating to all those present. The whole trend of the discussion showed that all schools were endeavoring to raise the standard of courses now given, and to include more basic, scientific training than now given.

The minutes will contain a skeleton of all the hearty discussion which took place at the business meetings. I can only hint at the high spots. Legislation, the old story of the name, the decision to arrange future conventions into sections held the greatest interest. And greatest of these was the prolonged discussion of the name of our association. Many members felt that the name Physiotherapy is in ill repute because it has been abused by the quacks. Others have a tender feeling toward it because by right of history it belongs to us. Much and prolonged was the discussion. Then a committee was formed—an investigatory committee to find our the opinions of state, county and national, medical organizations, The Council of Physical Therapeutics of the American Medical Association, as well as our local chapters and members at large, and this great task was given to Miss Mary McMillan. A report from this committee will settle the question at our next meeting in Detroit.

On Wednesday evening we had our banquet, and that seemed to be the acme of good times. Miss Ewing, after an excellent dinner, presented the speakers, or rather I should say the entertainers. We had other good times, too. The Shriners Hospital Garden, was the scene of a sumptuous tea, and the Doernbecker Children's Hospital was also our gracious host on its beautiful grounds.

I would like to take this opportunity (if those who contributed to our most pleasurable week should see this resume of our week in Portland) to thank them, each and all, for their part in it, without which we could never have had such an inspiring meeting.

HAZEL E. FURSCOTT, President.

Minutes of the Eighth Annual Convention, 1929

The eighth annual convention of the American Physiotherapy Association was held in Portland, Ore., July 8, 9, 10, 11, 1929, with headquarters at the Masonic Temple.

The convention opened Monday afternoon, July 8, with registration and an informal tea. The total registration was ninety-seven, thirty of this number being guests. This was a substantial increase over the registration of last year of forty-five members and twenty-three guests.

Program, 8 p. m. Miss Hazel Furscott, president of the association, welcomed the members and guests who were present and introduced the speakers of the evening. The address of welcome was given by Dr. C. Elmer Carlson, an associate member of this association and an old-time friend. This was followed by papers from Dr. H. M. F. Behneman of San Francisco and Dr. Chas. Sheard of Mayo Clinic. The association at large will be much interested in Dr. Behneman's presentation of his subject. It is with regret that we report Dr. Sheard's talk was extemporaneous, and so not available for reprint in the REVIEW. It was a paper well worth hearing, but one which requires subsequent study to digest all the material set forth. However, Dr. Sheard

has promised to contribute some material to the REVIEW, which those of us who are fortunate enough to hear him will look forward to eagerly.

July 9, 1929, the executive committee met from 8 to 9 a. m. with the chairman of the education and publicity committee and Miss Mabel Holton to discuss the school of Physical Therapy to be given at the University of Michigan Medical School at Ann Arbor. After discussion of the curriculum, the executive committee and Miss Irvine voted to approve this school and ask for the approval of the Council on Physical Therapy of the American Medical Association.

At 9:00 a. m., business meeting. Miss Furscott, president, called the meeting to order.

1. Motion made and carried to have chair appoint committee to approve minutes of this convention: Miss Sue Roen, Mabel Holton, Margaret Carr, appointed.

2. Report of credential committee:

Cleveland Chapter—No delegate nor alternate.

Chicago Chapter—Four votes, Marion Bremond.

Minnesota Chapter—Two votes, Martha Hindman.

New York Chapter—Four votes, Dorothea M. Beck.

Rhode Island Chapter—No delegate nor alternate.

Wisconsin Chapter—No delegate nor alternate.

District of Columbia Chapter—One vote, Freida Gasson.

Northern California Chapter—Two votes, Beulah Rader, George O'Brien.

Southern California Chapter—Three votes, Sue Roen, Jefferson Brown, Susie Rominger.

Oregon Chapter—Two votes, Ruth Babb (alternate).

Massachusetts Chapter—Six votes, Mary McMillan.

Pennsylvania Chapter—Five votes, Dorothea Beck (alternate).

Washington Chapter—One vote, Florence West.

Members at large—One vote, Margaret Collins.

Motion made and carried to accept report of credentials committee.

3. Motion to accept printed program as the order of business of convention carried.

4. Reports of committees read; president's report; secretary's report; treasurer's report; education and publicity report; legislative report; bureau of appointments. Motion made and carried to accept reports as read. Reports to be given to editor for publication in REVIEW.

5. Chapter reports: The following chapters sent greeting to the convention and gave informal reports of the yearly activities of the chapters: Pennsylvania, Massachusetts, Southern California, Minnesota, New York, Washington, D. C., Washington State, Northern California. These chapters report regular meetings, either monthly or bimonthly, with speakers from the medical profession, social meetings, and informal round-table discussions. Nearly all chapters stressed the difficulty of putting through any adequate legislative measures to protect the Physiotherapy technician.

6. Motion made and carried to send greeting and expression of appreciation to Miss Gertrude Beard for her work as circulation manager of the REVIEW.

7. Telegram of greeting from Miss Rosalie Donaldson of Mayo Clinic, read to the assembly.

8. Informal discussion of legislative procedures in regard to Physical Therapy. The consensus of opinion indicated that the association should try to put through a system of examination and registration similar to that of the registered nurse. This must be done individually by each state. Pennsylvania now has the only efficient legislation for licensing and registration of Physiotherapy technicians.

Motion made and carried to ask the Pennsylvania Chapter to make a report of the procedure by which this legislative measure was put through. This report to be sent to each chapter to give some working basis for similar legislative procedures.

Motion made and carried to ask each chapter for a similar report.

Motion made and carried to ask each chapter to put forth an effort for examination and registration rather than legislation.

9. Resignation of Miss Eleanor Jones as chairman of the legislative committee accepted. Mrs. Freida Gasson of Washington, D. C., appointed as chairman.

10. Motion made and carried. The executive committee to investigate and purchase new and up-to-date files for the treasurer and secretary.

11. Motion made and carried to adopt blue and gold as the official colors of the American Physiotherapy Association.

12. Motion made and carried to elect Dr. John C. Coulter and Dr. C. Elmer Carlson as honorary members of the American Physiotherapy Association.

13. The question of having a paid secretary-treasurer for the association was discussed. Discussion revealed that the finances would not warrant such an expenditure at the present time, but as the membership of the association grows it will become a necessity. Motion made and carried asking the president to appoint an assistant to do some of the routine work of the treasurer and secretary.

14. The name of the American Physiotherapy Association came up for general discussion. A motion was made to appoint a committee to get the opinion of the Council on Physical Therapy of the A. M. A., the officers of the A. M. A., and the advisory committee of the American Physiotherapy Association on this subject and report to this convention. The motion was amended to include the opinion of the Orthopedic Association. Motion not carried. A roll call was taken of chapter delegates, officers and members at large to determine the general opinion on this subject of keeping the name of the American Physiotherapy Association as is, of if expedient to change to meet the sentiments of the medical profession.

Cleveland—

Chicago—To keep present name.

Minnesota—To keep present name.

New York—To keep present name, but willing to change if expedient.

Southern California—To keep present name, but willing to change if expedient.

Oregon—To keep present name.

Rhode Island—.

Wisconsin—.

District of Columbia—To keep present name, but willing to change if expedient.

Massachusetts—To keep present name until a better profession name is coined.

Pennsylvania—To keep present name.

Washington State—To keep present name.

Member at large—To keep present name.

Officers—Miss Burrell, anxious to change name; Miss Rader, keep name till some better name is suggested; Miss Ballard, willing to change; Miss Furscott, wishes to follow suggestions of committee.

Motion made and carried to have the executive committee appoint a representative committee to make a report to the executive committee concerning the opinion on the subject of the name of the American Physiotherapy Association, report to incorporate the opinion of the officers of the A. M. A., Council on Physical Therapy, Orthopedic Association A. P. A. Advisory Board, state and county medical associations and local

chapters of the association. This report to be published in the REVIEW and each chapter notified at least two months before the next convention.

Meeting adjourned.

12 o'clock. Officers' conference and luncheon cancelled because of lengthy business meeting.

Program, 2 p. m. The afternoon was spent very profitably at the Shriner's Hospital for Crippled Children. A paper was given by Dr. Leo S. Lucas on "Scoliosis." Dr. A. C. Jones delivered a paper on the "Sinusoidal Current." Miss Dorothea Sorenson gave a demonstration of scoliosis exercises, and Miss Sue Roen demonstrated pool exercises. This meeting was followed by a delightful tea served on the hospital grounds by Miss Humphrey, Superintendent of Shriner's Hospital.

Program, 8 p. m. Papers by Miss Sarah R. Davis, Dr. Steels F. Stewart (delivered by Dr. Vernon Thompson) and Miss Lillie Tucker were enthusiastically received.

July 10, 9 a. m. Round-table education program.

1. Miss Irvine opened meeting and called on:

2. Miss McMillan, who gave a history of beginning of Harvard Medical School course and outline of curriculum. She emphasized that it was a post-graduate course and not a Physiotherapy school.

3. Dr. Wilmoth Osborne of Oregon University emphasized need for good science foundation and less electrotherapy in the training of the Physiotherapy technician. Present nurse's training not a sufficient foundation.

4. Miss Lillie Tucker, representing Miss Graham's School in Los Angeles, stated that this course was one year, theory given at the University of Southern California, and practice at the Children's Hospital.

5. Mr. Cummings gave a description of the course and equipment at the Tacoma General Hospital.

6. Miss Babb described the Physiotherapy School at the Tacoma General Hospital.

7. Miss Mabel Holton, description of school to be started at University of Michigan School of Medicine.

8. Miss Jefferson Brown, graduate of Philadelphia Orthopedic Hospital, thinks the standard none too high. Good course in anatomy, but whole course too short.

9. Discussion of curriculum.

Very desirable to have anatomy courses include human disection.

Very desirable to include more hours in applied physiology.

Very desirable to include more electrotherapy.

Very desirable to include courses in dietetics and nutrition.

Very desirable to include course in aseptic technique.

Very desirable to include course in electro-physics.

10. Discussion of awarding of degrees for Physical Therapy, whether from school of education or medicine.

11. Discussion of Physical Therapy schools, courses, post-graduate courses. An attempt to define each.

12. Meeting adjourned.

11 a. m. Business meeting continued.

1. Motion made and carried that the secretary send a vote of thanks to the Portland Chapter for their cordial hospitality and their efficient management which made the convention so great a success.

2. Motion made and carried that the secretary write each chapter suggesting that the chapter officers hold office for two years to coincide with the term of office of the National Association officers.

Business meeting.

3. Motion made and carried that a registration fee of $1.00 be levied on those attending convention to help defray the convention expenses ($34.00 was collected).

4. Motion made and carried that program of future conventions be grouped in sections. The chairman of each section shall be responsible for the program of her section and work in conjunction with the main program committee.

5. Recommended that the convention committee of this convention file a report with the executive committee, incorporating the procedures, arrangements, and management of convention business. This report to be sent to the next convention committee to facilitate the work of preparing for and running the conventions of the future.

6. Motion made and carried that the subscription to the REVIEW be raised from $2.00 to $2.50 for nonmembers of the association. Meeting adjourned.

Program, 2 p. m. The afternoon program consisted of papers presented by members and medical men. The paper by Dr. Chappel is highly recommended. The session ended with an open discussion concerning the Physical Therapy office department handling industrial ambulance cases, having one technician. The question was the minimum equipment for efficient work and the maximum number of patients which could be efficiently treated by one technician. The consensus of opinion indicated that necessary equipment should include one diathermy machine, one sinusoidal and galvanic machine, one air-cooled and one water-cooled ultra-violet machine, one arm and leg whirlpool or other hydro equipment, one heating apparatus such as infra-red, baker, or radiant light, a limited amount of gymnastic apparatus (stall bars, head sling, pulley weights, posture mirror, etc.). One technician with this equipment can efficiently handle and average of fifteen patients daily (eight hours).

Banquet, 7:30 p. m. Sign of the Rose Tea Room. An excellent dinner was served to about seventy members and guests.

July 11, 9 a. m. Dr. R. C. McClure of the Oregon State Industrial Accident Commission held a clinic in the Physiotherapy department. The meeting consisted of a review of case records, X-rays, and inspection of the patients under treatment in the department.

2 p. m. A visit to the U. S. Veterans Bureau Hospital with an instructive paper presented by Dr. E. J. Ernest.

4 to 6 p. m. Visit through the hospital and the Doernbecker Children's Hospital.

The convention closed with a tea given by the Oregon Graduate Nurses Association on the Doernbecker Hospital grounds. Submitted by

CHARLOTTE H. BALLARD,
Secretary.

WILL THOSE WHO PURCHASED THE BOOK BY PEMBERTON ON "ARTHRITIS" AT THE CONVENTION, GET IN IMMEDIATE TOUCH WITH MISS BECK?

Abstracts

John S. Coulter, M. D.

Assistant Professor of Physical Therapy, Northwestern University School of Medicine

Chronic Arthritis, Its Classification and Treatment by Physiotherapy. By G. L. Kerr Pringle, M. C., M. D. (Ed.) in Brit. J. Actino. 4:1:6-11: April, 1929.

In 1923 the British Ministry of Health published its report on "The Incidence of Rheumatic Diseases," and the classification therein is gradually becoming the standard classification, and has recently been adopted by the International League against Rheumatism.

GROUP A

Rheumatic Fever (acute rheumatism).—Usual textbook description.

Subacute Rheumatism.—A mild attack of acute rheumatism, pyrexia not exceeding 101, responding to salicylate treatment, often accompanied by endocarditis, without chronic joint deformities.

GROUP B—NONARTICULAR MANIFESTATIONS

Muscular Rheumatism (myalgia) including fibrositis, pleurodynia and torticollis, but excluding lumbago. —Symptoms of characeteristic pain, aching and stiffness, sometimes accompanied by physical signs of thickening of the fibrous tissue and by the presence of nodes.

Lumbago.—Myalgia of the erector spinae muscles (separated for classification from No. 3, as being an easily distinguishable clinical entity and on account of its occupational interest.)

Sciatica and Brachial Neuritis.

GROUP C—CHRONIC JOINT CHANGES

Rheumatoid Arthritis (infective periarthritis).—Usually with an acute initial attack of pyrexia of considerable length; many smaller joints usually affected, especially first and second phalangeal joints, spindle-shaped joints, the tempero-maxillary joint are often affected; changes mostly periarticular in character, often accompanied by much fibrositis; lesions often bilaterally symmetrical; nutrition of patient almost invariably bad; patients usually females.

Osteoarthritis, including Malum Coxae Senilis.—Usually afebrile; gradual onset, often at first confined to one large joint; fewer and larger joints affected, especially knee and hips; grating; lipping; eburnation; osteophytes; lesions often symmetrical; patient usually well nourished.

(See note below as to Syondylitis[1].)

Gout.—(a) Acute, usual textbook description; (b), Chronic, polyarthritis with a definite history of repeated attacks of acute gout or the presence of tophi.

Chronic Joint Changes, unclassifiable.—Chronic joint changes which cannot be allocated to any of the above.

(See also note on subclassification[2].)

In this paper we are more concerned with Group C, chronic joint changes.

TREATMENT

There are two points to be remembered—

(a) The arrest and cure of the disease.

(b) The correction of the results of the disease.

To attempt the latter before the former is often a waste of time and irreparable damage may take place.

[1]Spondylitis Deformans should as a rule be entered under osteoarthritis with subclassification (spondylitis) in brackets, except in those rare cases in which the spine only is affected and X-ray examination shows ossification of ligaments. These, it is requested, may be separately reported.

[2]Subclassificatioin as 6 (astrophic), 7 (monarticular).

INFECTIVE PERIARTHRITIS (RHEUMATOID ARTHRITIS)

Type 1. Here is a case of infective arthritis not of long duration, where it is most important that the casual factor should be dealt with. Pain may be alleviated by diathermy, hot baking, hot fomentations, steam bath, heat packs, etc., and the joint or joints affected must be kept in the optimum position in case ankylosis should occur. The patient's general condition may be improved by general ultra-violet irradiation, careful dieting, probably with reduction of carbohydrates.

As long as the joint or joints remain "hot," the disease still is active, and any movements and exercises must be carried out with extreme caution.

Massage in these cases should never be to the joint but to the surrounding tissues, the muscles controlling the joint, and especially the extensors.

Remedial exercises for the finer joints, especially after induction of active hyperemia, is often helpful; knitting, playing the piano, or using the creeping board are all of use.

For some of the larger joints, interrupted galvanism to the wasted muscles, especially the extensor muscles of the thigh when the knee joint is affected, is most useful and beneficial.

Type 2. In these cases we believe that the disease is no longer active, and that the resistance is good. It is in these cases that Physiotherapy and electrotherapy are so useful, especially combined methods of treatment, such as hot baking, diathermy, hot air or steam, etc., followed by ionization, etc.

Remedial exercises after induction of active hyperemia and massage will be observed to give better results.

GROUP C 7. OSTEOARTHRITIS.

Carbohydrates should be cut down to a minimum, and a fair proportion of red meat allowed, unless contraindicated by a high blood pressure, or defective kidneys. Green vegetables, raw and uncooked fruit, and a little alcohol, preferably whisky or white wine.

In the local treatment of osteoarthritis, there are two schools. One is in favor of mobilization of the affected joint, the other of fixation of the joint until the pain has ceased. I believe that the correct method of procedure lies between the two.

Pemberton has shown how deficient and sluggish is the capillary circulation in these arthritic joints. Therefore it is most necessary to produce in them an active hyperemia, and to do all we can to increase the circulation in the joint and its surrounding tissues. Hot fomentations, hot packs, hot douches, undercurrent douches, saline and other mineral baths, douche massage, and electric radiant heat, ionization, etc. Massage must not be applied to the joint but to the surrounding muscles only. Manipulation exercises should only be carried out by the patient.

CHRONIC VILLOUS ARTHRITIS

Static deformities, such as flat foot and knock knee, must receive attention; general conditions, such as obesity and menopausal disturbances, will also require correcting with suitable diets, and the exhibition of thyroid gland extract. Radiant heat baths, Bergonie treatment, Turkish baths, are all useful. Locally, steam baths followed with ionization for forty minutes is excellent.

General Principles in the Treatment of Fractures from the Standpoint of the Physiotherapist. By Heinrich F. Wolf, M. D., New York, in Amer. J. Surg., 7:1: 106-111: July, 1929.

First Aid

Hot Applications Immediately After an Injury

Heat in any form brings about a dilatation of the peripheral vessels and hyperemia of the skin. Heat will thus cause an increase of hemorrhage and blood extravasation.

The proper treatment would be cold applications, which do not always mean ice bags, as these may give rise to severe pain, probably caused by the spasm produced by the intense cold. A compress kept cold by frequent changes or the application of small pieces of ice will give prompt relief.

Setting the Fracture

The aim in the treatment of a fracture is, in the main, threefold: good union, good function and good cosmetic effect.

I have had occasion to see many fractures, particularly of the wrist, which were impacted, and in which an effort has been made to set the bone and bring about a perfect alignment. All the surgeon had done was to increase the traumatism, and thus increase the difficulties for the after-treatment. This will happen very frequently when these manipulations are made on the strength of the roentgenogram without determining, as in the old-fashioned way, whether the fragments are movable and whether crepitation can be felt.

In many instances the patient would have been much better off if the surgeon had refrained from any interference and had started the active treatment at once.

Except in cases of emergency, no fracture should be set without an anesthetic, not so much for the sake of the patient and to save him pain as to obtain a perfect relaxation of the muscles and to be able to manipulate the fracture without adding to the injury of the tissues.

Next to good union comes good function. Of course, the union of the fragments must be considered first as of the greatest importance, and it depends on the type of fracture how soon one must take care of the joints which are determining in the function. The nearer the fracture is to the joint, the quicker the after-treatment must be started.

Good cosmetic result. This depends in the first place on the sex. A deformity of a forearm with perfect function will be trivial for a man whose arm is usually covered. The same injury will mar a woman forever. The same holds true of the clavicle.

Of great importance also is the occupation and social position of the patient.

As soon as a fibrous union has developed, the purpose of the immobilization has changed. It is used to protect the fibrous union which already exists.

As long as no union exists, the immobilization must not be interfered with, lest the apposition be disturbed. Early actve treatment should not be tried as the advantage gained would not be worth the chance taken. If a fibrous union has developed, we are sure of a certain amount of coherence and can institute active treatment if we exercise proper care.

If, on the other hand, the fragments are impacted or held in place by other means, or if one fragment is so small that it can be neglected, immobilization can have one object only, to prevent or stop pain. It is then obvious that active treatment may be started at once as the fragments are united anyhow.

Wherever circumstances permit, immobilization should be done in such a way that immediate treatment of the injured part is possible.

Massage should be started as soon as possible. We should treat the patient according to the needs of the case and not according to principles. Thus, fracture of the femur shafts should be treated late. No greater calamity is possible than a faulty union in the femur or tibia.

The massage must be given with the greatest gentleness; only stroking can be used, with the hand of the operator fully relaxed. Only the fully relaxed hand will bring about the full relaxation of the spastic muscles in the first days after the injury. The motion is done from the shoulder; the hand forms merely an attachment. Masseurs who move their fingers against one another do not understand the technique used in fracture treatment.

The object of the massage is what I term an internal debridement. The wreckage left by the injury and the hemorrhage should be carried off as soon as possible in order to minimize the regenerative inflammatory reaction, with all the dangers following in its wake. Massage in the later stage, when the swelling and the blood extravasation have disappeared, is of very little value. Its effect on the muscles atrophied by disuse is far better replaced by stimulation with the electric current.

Mechanotherapy

Mobilization should not be allowed to hurt for the following reason: If we move a joint and cause severe pain, the patient goes away with a sore joint and he will not move it but keep it immobilized.

For the purpose of reducing the pain during the mobilization, we use the various forms of heat.

Though many physicians advocate the use of diathermy a few days after the injury, it seems that hot air or infra-red rays are more advisable, as technically diathermy cannot be applied efficiently. Hot whirlpool baths and motion under the influence of the infra-red rays are easily executed on account of the decreased spasms in the muscles.

In cases where no swelling is present or where a stiffness and pain in the joint persists after long immobilization, diathermy is the only efficient treatment.

The passive motions are, if possible, done by the patient.

One can see over and over again that a patient making satisfactory progress is thrown back days and weeks by brutal attempts at mobilization.

Treatment of the Muscles

The method which approaches the normal contraction is the stimulation with electrical currents.

Nonunion

Diathermy will be of no value where the nutrient arteries of the bone are destroyed, and a new circulation must be established.

Ionization will stimulate the activities of the tissue and passive hyperemia may or may not favor the development of connective tissue and the calcification.

Treatment of Pneumonia. By Berthold T. D. Schwartz, M. D., Jersey City, N. J., in Jour. M. S. New Jersey, 26:8:567-569: August, 1929.

Continued favorable literature appears in regard to the use of diathermy; and more recently ultra-violet rays to increase the general vitality, treatment of the King of England being a very conspicuous case. The use of X-rays in unresolved pneumonia is reported with apparent benefit.

Stress is laid on the following measures in the treat-

ment of pneumonia: Complete physical and mental rest from the start of illness; copious ingestion of fluids; orthopneic position; the free circulation of air in the room; if necessary effected by fans; early use of antiserum; early and continuous use of oxygen in a proper amount when slightest cyanosis appears; physiotherapy; use of digitalis in heart failure, and prophylactically, especially in adults.

The Treatment of Minor Injuries. By John J. Moorhead, M. D., New York, N. Y., in N. Y. State J. of M., 29:17:1049-1054: Sept. 1, 1929.

BURSITIS

In the shoulder the subdeltoid or subacromial group usually respond well to postural treatment that requires abduction of the arm. To this add massage, dry heat and diathermy. In passing it may be stated that diathermy is no cure-all and of all forms of Physiotherapy we rely mainly on massage and dry or moist heat in all kinds of traumata.

DISLOCATIONS

There are certain basic rules for the reduction of any dislocation. The after-care requires us to employ massage and gradual motion from the very beginning, and, for that reason, casts and other dressings which hide the part should not be used.

Let us remember that every dislocation is associated with arthrosynovitis, and, as stated previously, the treatment for this is massage and motion.

FRACTURES

After reduction, comes retention or splinting, and the essential of this is safety; hence, every splint should first of all be safe, and, second, it should be simple. For that reason make the splint fit the patient, and do not try to make the patient fit the splint.

In the fracture lexicon there are four R's; first is Recognition or diagnosis; second is Reduction or setting; third is Retention or splinting; fourth, Restoration or functioning.

How long should splints be worn? Our rule is to remove the least necessary section of the splint when union is firm—that is, when callus is in the lead pipe stage. This is usually in from ten to sixteen days. The remainder of the splint is removed when union is solid —that is, when callus is in the iron pipe stage. This is usually in from twenty-one to thirty days. In long bones, these periods are of course extended.

Physical Therapy in Skin Ulcers. By Heinrich F. Wolf, M. D., New York, in Amer. J. Surg., 7:2:239-241: August, 1929.

BACTERIAL ULCERS

In tuberculosis ulcers, the splendid results of heliotherapy in combination with proper body hygiene are well known.

TROPIC ULCERS

Gentle, radiant heat with the accompanying improvement of the circulation is the only treatment which at least will do no harm.

Bedsores will heal only if the pressure is relieved and the patient's general condition is improved. Then a slight stimulation will be well borne, and a treatment with an arc lamp which combines heat with ultra-violet rays gives the best results.

CIRCULATORY ULCERS

Physical Therapy is of great value in many cases, but to use it successfully each case must be studied and its needs determined.

Ultra-violet rays in any form alternating with arc lamp or infra-rays to improve the circulation will be found of great value.

BURNS

Second degree burns consist in the formation of blisters. One should put ice on the injured part immediately. In this way one can decrease the hyperemia following the burning, and thus prevent exudation. If the tissue is severely injured, the superficial circulation damaged, one cannot afford to decrease the circulation any further but must increase it.

Thus gentle heat, particularly from an infra-red lamp, is most helpful. The treatment should be continuous. Under the steady heat the patients feel very comfortable and the healing is rapid.

A Warning—Particularly for the Tuberculous Sick. By T. L. Harrington, M. D., Milwaukee, in Wisconsin M. J., 28:8:367-404: Aug., 1929.

Both the sick and the well are injured by "sunburn."

The exposure of the chest is dangerous in pulmonary tuberculosis.

Underexposure is much safer for the patient than overexpsoure.

Pigmentation of the skin is Nature's protection against the ray, and at the same time is a measure of the value obtained from heliotherapy.

The signs of an overdose are a tired feeling, an elevation in temperature and increase in pulse rate, headache, nausea, increase in cough and expectoration. (If one or more of these symptoms are manifest an hour after the treatment, it is Nature's warning of an overdose.)

The eyes and upper part of the head should be shielded from the rays.

The sun treatment should not be taken for an hour before or an hour after the meal; nor should it be taken at midday, when the sun is hottest.

When the sun is not shining or when the individual is oversensitive to the direct ray, benefit is received by exposing the body in the shade.

Pelvic Inflammation and Its Modern Treatment. By Henry Wilderman, Philadelphia, in Med. J. & Rec., 130: 3:130-133:Aug. 7, 1929.

Diathermy, according to Magill, Cherry and others, is regarded as the most effective means at our disposal for relieving pain and resolving the pelvic masses in the secondary stages of tubal disease. The efficacy of diathermy depends largely on the location and degree of pathological involvement of the lesion. Generally, it is believed that diathermy is a valuable adjunct in the treatment for almost all chronic inflammatory diseases. Surgery in these cases is either radical or conservative.

Tuberculosis of the Intestines. By Walter A. Griffin, M. D., in N. E. J. of M., 201:9:402:Aug. 29, 1929. (Supt. Sharon Sanatorium; instructor in graduate school of medicine, Harvard.)

The best recorded results in treatment have been brought about by the use of artificial heliotherapy. Brown and Sampson have proved cures by this means, checking their observation by X-ray examinations before and after the use of the lamps. At Saranac Lake the quartz mercury vapor lamp has been most used, although the carbon arc would seem to be as good, though less easily controlled by the patient. The radiations are given over the entire amount of body surface, increasing as rapidly as the individual's skin will allow, until finally a good amount of pigmentation has been created, when the treatment may be given for about two hours a day.

Unfortunately, artificial heliotherapy is expensive and at times patients cannot afford to continue its use for

the necessary number of months. As a substitute, direct sun baths may be taken during some seasons of the year, but the treatment is bound to lapse in the winter months.

There have been some recent experiments made by McConkey and Smith, of Saybrook, N. Y., on the value of cod liver oil and tomato juice in tuberculosis of the intestines. They claim as good results as with heliotherapy, or even better gains in weight, and certainly the treatment is available to all.

Mercury Vapor Quartz Light Therapy in Pediatrics. By H. Harris Perlman, M. D., P. D., Chief, Division of Artificial Heliotherapy, Department of Pediatrics, and Demonstrator in Diseases of Children, Jefferson Medical College and Hospital, Philadelphia, Pa., in Arch. Physical Therapy 10:8:365-369:Aug., 1929.

It is not unusual to secure definite improvement in chronic coughs in children by generalized exposures with ultra-violet light. The modus operandi is still open to question. It is quite likely that results are brought about by an increase in the calcium of the body when this element is low, also by an increase in the immunologic bodies (leukocytes, etc.).

Nontuberculous patients with chronic bronchitis seem to fare better by irradiations than those with tuberculous foci. When one realizes that medicinal preparations are often unsatisfactory for treating chronic bronchitis in children, a procedure such as mercury vapor quartz light irradiations promises untold advantages to the therapeutist.

Ultra-violet light is now looked upon as a valuable remedy in treating anaemias of secondary origin. It is believed that carefully regulated doses of mercury vapor quartz light anchor iron in the body and increase the red blood cells. This is a worth-while procedure for treating secondary anaemia in the young.

In conclusion, it would be well to impress upon you the necessity for greater discretion to be exercised when patients consult you in regard to the purchase of a lamp. The comparatively new form of therapy belongs to the medical profession, who should control its use, and not to cultists who have had no training in its application and who may endanger life by its haphazard use.

Heliotherapy in Pediatrics. By Roy P. Forbes, M. D., Denver, in Colorado Medicine, 26:9:316:Sept., 1929.

The relationship between head infections (particularly sinusitis) and chronic bronchitis has been the subject of considerable discussion in the past three years.

It falls to the physician who treats children to assume the responsibility for the prevention of chronic bronchitis and bronchiectasis. Heliotherapy can play a very important role in this program. We have observed that the child who is kept tanned seldom develops a severe, acute bronchitis or pneumonia. The summer-tanned child usually keeps his color until about January, after which time he shows increasing susceptibility to chest infections. Unfortunately, the child who suffers from bronchitis has almost invariably been coddled, dressed too warmly, and kept in an over-heated house, and his mother will not take kindly to the suggestion of sun baths during the winter months. Some parents will provide special glass windows through which ultra-violet light is transmitted, but the only glass which has been found quite satisfactory for this purpose is very expensive. However, for the timid mother and the coddled child, an excellent substitute for heliotherapy is at hand—the therapeutic lamp.

I do not believe that the therapeutic lamp quite equals the value of properly directed heliotherapy, but frequently the two methods can be combined to excellent advantage. Once a child has been tanned, he resents warm clothes, super-heated houses and is very comfortable and safe in a sun bath during the winter months, providing the sun temperature is 85 degrees or above, and there is reasonable protection against the wind.

The Treatment of Burns by Ultra-Violet Light. By Joyce Peake, M. R. C. S., L. R. C. P. (Chief Clinical Assistant in Electro and Actinotherapeutic Depts., Royal Free Hospital) in Brit. J. Actinotherapy, 4:5: 96-97:Aug., 1929.

It is highly important that treatment with ultra-violet should be auxiliary to the usual methods for combating shock, and that the bactericidal property of the rays should not be used as a substitute for the surgical removal of damaged tissue. The obstructive action of ointments, powders and pigments similarly renders futile any attempt at irradiation, if any of these substances lie in the path of the rays.

Good results have been obtained in cases with very extensive lesions by exposing the patient to the rays from an electric light bath, either continuously day and night, or for a few hours at a time. The amount of ultra-violet actually received by the patient is obviously quite small and is supplemented as a rule by short daily exposures to a mercury vapor lamp.

The details of the technique are as follows:

1. After careful removal of the dressings, the remains of any oil, ointments, flour or any other substance which may have been applied as first aid are cleaned away, together with any loose pieces of skin. This is done by flooding the area with paraffin and then gently dabbing and wiping with a paraffin-soaked swab.
2. The next step is the spreading of the paraffin.
3. The mercury vapor lamp is placed at a distance of 30 inches from the burn and treatment given for two minutes. For babies the dose never exceeds this, but in treating older children and adults the lamp is placed at 27 inches after about a week or ten days.
4. When irradiation is over, the burn is first covered with two double layers of gauze, both completely saturated with paraffin. A layer of dry cotton-wool is next applied, and lastly a sheet of oiled silk. The whole is kept in place by a broad bandage.

Sunshine and Clothing. An editorial in Jour. A. M. A., 93:6:461-462:Aug. 10, 1929.

In recent years much of the accepted efficacy of solar irradiation for the promotion of health has been attributed, as the result of careful scientific investigations, to the ultra-violet components of the sunlight. These rays, which represent only a small part of the energy involved, not only are singularly potent but also may be readily obliterated by various interposing mediums. They fail almost completely to penetrate ordinary window glass, through which ordinary light rays pass readily. Skyshine may contribute a considerable part of the desired effects of heliotherapy. (Sunshine, Skyshine and Rickets, editorial, J. A. M. A., 90:118:Jan. 14, 1928.) This is demonstrably true with respect to antirachitic potency. (F. F. Tisdall and Alan Brown, Antirachitic Effect of Skyshine, Am. J. Dis. Child. 34: 737:Nov., 1917.) It has become evident that in order to get maximum results from heliotherapy one must be assured that direct solar radiations, as well as those which are indirect or diffuse, are being received and that it is not necessary to discard all solarization because direct sunlight is not available. Leonard Hill has listed, as causes for variation in the amount of the ultra-violet component of sunlight, the source, whether skyshine or

sunshine; the time of day; the time of year; the pollution of the air; the geographic location, and the altitude. (Leonard Hill, Proc. Roy. Soc., London, 102:119: Nov, 1927.)

In view of this it has become imperative to secure dependable information about the actual conditions that exist in the different parts of the world and even in individual communities. Surveys as to the quantity and quality of sunlight freely available have already been reported from many regions. Some of them are reviewed in a recent contribution of Manville of the University of Oregon Medical School. (I. A. Manville, "The Ultra-violet Component of the Sunlight of Portland, Ore.," Am. J. Dis. Child. 37:973:May, 1929.) They call attention again to the extent to which smoke pollution and fog may obstruct the ultra-violet rays. According to Manville, Portland, Ore., as a representative locality of the Northwest, has the lowest annual average of sunshine of all areas of the United States. Michigan, Maine, Vermont, New York and the Ohio Valley receive almost as low a percentage. After April, when one expects clearer skies, the amount of smoke in the air in some parts of the Northwest increases. Farmers, homesteaders and others select this time of year, as well as the fall after the first rains, to burn their slashings. During the summer months the amount of smoke in the air steadily increases and is due for the most part to forest fires. Hence the pall of smoke hanging over the Northwest during the late spring, summer and early fall is considered more of a menace than a nuisance.

To meet these situations, various substitutes for sunshine—notably artificial irradiation and irradiated foods—have been proposed. Manville has reminded us, however, that modification of dress embodying the hygiene of clothing is worthy of consideration. He states that the relative mildness of the climate in the Northwest should permit of greater freedom in the style of dress. Man has not yet compensated for the deficiency of ultra-violet radiation in the temperate zone; in order to prevent undue losses of heat he has clothed himself in such a manner that a poor condition is made worse. However much has been said against the modern styles in women's dress, Manville believes it must be admitted that they allow much more exposure of the skin to the beneficial action of the sun and air than is permitted by the prevailing modes for men. It has been shown that certain fabrics possess the power of greater transmissibility to ultra-violet radiations than others. It would therefore seem that a more intelligent adjustment to styles and choice of fabrics would have considerable influence in alleviating the condition of shortage of ultra-violet rays. Reformation of dress in the interest of better solar irradiation has begun to attract attention. A vogue for sun suits for children is being created. The special needs of different localities, notably as they are affected by environmental temperature, call for discriminating recommendations. Dress reform may well proceed, in part at least, on the basis of the physiologic needs of those who wear the clothing.

Tar and Quartz Light Therapy. By J. R. Allison in Southern Med. Jour., 22:592:June, 1929; abst. in Jour. A. M. A., 93:3:236:July 20, 1929.

Allison used coal tar in combination with quartz light in the treatment of certain dermatoses. The air-cooled light is used because the rays are more penetrating. The technique consists of rubbing a thin coat of a proprietary tar-zinc oxide preparation over the surface to be treated, and then exposing it to quartz light from fifteen to twenty minutes. After three or four such treatments on successive days, the skin will tolerate from ten to fifteen minutes' exposure without the ointment. This rapidly increased tolerance of the skin to quartz light in the presence of tar is of value. It usually requires from eight to ten days with quartz light alone to attain a tolerance of from ten to fifteen minutes.

The After-Care of Infantile Paralysis. An editorial in International J. Med. & Surg., 42:7:355:356:July, 1929.

According to the U. S. Public Health Service, after-care is probably the most important public health function in an outbreak of infantile paralysis. In most cases this falls best upon the parents, who must first be trained by the family physician. It is the experience of the most qualified observers that better results are obtained from the combination of physician and parent than where the management of the exercises have been left to an unskilled gymnast or masseur.

The training of the muscles should be begun as soon as the patient's limbs can be moved freely without pain. In some cases this will be within three weeks after the attack, and in some others after a much longer period. Allowing patients to be on their feet too soon and too much has perhaps caused more crippling than any other factor in the care or lack of care of these patients.

In infantile paralysis the beneficial effects of muscular contraction on the circulation may be in part supplied by massage, heat, passive movements, etc., and these measures undoubtedly do to a certain extent prevent the wasting away of the paralyzed muscles. Wherever there is, however, the ability to contract a muscle even slightly by an effort of the will, the muscle cells are more favorably affected by this contraction than by any quickening of the circulation by other means.

In all exercise periods, the whole attention of the patient should be required, or his ability to use his muscles will be much underestimated and the exercises will be much less effective.

The U. S. Public Health Service will be glad to furnish interested persons a copy of a set of exercises in muscle training which is recommended in connection with the after-care of infantile paralysis.

Infant Gymnastics. By J. Schoedel in Jahrbuch f. Kinderheilk 122:316:April, 1929; abst. in Jour. A. M. A., 93:5:422:Aug. 5, 1929.

Schoedel states that infant gymnastics are most effective in the period of greatest growth; namely, in the first twelve to eighteen months. Degrees of scoliosis that are resistant to treatment in early childhood are easily corrected in from four to eight weeks in infancy. He emphasizes the fact that infants who lie still in bed all day are much more susceptible to broncho-pneumonia than are infants who sit or stand a great deal. In consideration of these facts, together with the general beneficial action of gymnastics, he recommends that infants be given passive exercise, beginning the fourth or fifth month after birth. The need for infant gymnastics is particularly great in hospitals for nurslings, because here even the usual handling of the infants by their mothers is missing. The article contains fourteen photographs which show passive exercises for developing the various parts of the body in infants.

Dangers of Vibratory Devices. Letter in Jour. A. M. A., 93:5:402:Aug. 5, 1929.

To the Editor: Vibratory and other types of passive exercise machines are now widely advertised to the laity. It is our opinion that the indiscriminate and unsupervised use of such apparatus is fraught with danger. We have a case on record of a severe hemorrhage of the bladder

resulting from five minutes' application of an exercise machine. Our committee wishes to make a survey of this subject and asks members of the profession for information as to any harmul occurrences experienced in daily practice due to these machines.—Richard Kovacs, M. D., 223 East Sixty-Eighth St., New York, Chairman, Special Committee of Physiotherapy, Medical Society of the County of New York.

Duodenal Hemorrhage Due to Motor-Driven Massaging Appliance. By H. W. Wuerthele, M. D., in Jour. A. M. A., 93:5:376-377:Aug. 3, 1929.

The chief complaint and present illness started Feb. 23, 1929, after the man had exercised about one hour in a gymnasium under the instruction of a physical director, and had had a massage and applied an electrically driven vibrating massaging belt to his abdomen for about ten minutes. He developed an acute soreness in the abdomen about one inch to the right of the umbilicus, some weakness and dizziness. That evening he had little appetite and took a mild laxative, but did not have any nausea or vomiting; the bowels moved next morning (large, formed, tarry stools); there were many bowel movements, possibly fifteen, all the stools being tarry in appearance and well-formed. The patient still remained up and about the house. Sunday evening he called me to his home. The impression was duodenal ulcer, with bleeding or a rupture of a small blood vessel in the small intestine high up.

February 26, I called Dr. W. W. G. Maclachlan in consultation. His impression was a bleeding duodenal ulcer, and he said that at that time he had a patient in the hospital who ruptured an apendix with a motor-driven electrical massaging apparatus.

CONCLUSION

For some time many so-called health-improving mechanical appliances have come on the market. I do not question their value under proper medical supervision, but their indiscriminate use by laymen will undoubtedly cause much harm.

Hearing Exercises for the Partially Deaf. By L. L. Albert, M. D., 229 Valentine Lane, Yonkers, N. Y., in Rhode Island M. J. 12:8:123:August, 1929.

Auditory excitability can be increased by conscientious practice in the reception of auditory impulses. In other words, training or hearing exercises can improve one's hearing to a remarkable degree.

Methodical auditory exercises will tend to combat and counteract diminishing sound reception. The exercises should give the ear the greatest possible stimulation, arousing dormant attention and exciting the recognition of the various letters and syllables. The exercises are graduated and adapted for various degrees of acquired deafness. They may also be employed successfully in many cases of congenital deafness.

By methodical auditory exercises for these cases of hard hearing, we refer to methodical instructions in distinguishing various sound and speech impressions.

In practicing with speech sounds it is advisable not to raise the voice higher than that just audible to the patient. We should speak at some distance from, rather than close to, the patient's ear. Exercises should consist of short sentences, words, syllables and various letters which the patient is to repeat. Mistakes are corrected by repetition. It is most difficult of all to distinguish between f and s and between b, d and z. Exercises should de distinctly enunciated.

Exercises should be short on account of rapid fatigue, but should be repeated frequently during the day. It is less trying to listen to sentences which have a stimulating effect.

Chronic Suppurative Otitis Media—Classification and Treatment. By W. A. Poole, M. D., Lexington, in Kentucky M. J., 27:9:395:Sept., 1929.

The new antiseptics gave no better results than the old.

The dyes were not used extensively, but results were disappointing.

Diathermy seemed unsatisfactory, but was not altogether condemned as it was not much used.

Surgical diathermy was used in a few cases and was thought to serve a more definite purpose, but could never replace a clean surgical operation where one could see just what was being removed and what left.

Treatments by ionization of zinc and copper were tried and abandoned, largely because of the pain and discomfort of the patient, perhaps due to a faulty technique or too coarse adjustment of the galvanic generator.

Light, especially the infra-red rays, were used in several cases without mastoid involvement, and seemed to help some, but here again was urged the necessity of X-raying the mastoid before applying the heat rays to any ear.

After-Care of Influenza Cases. By Albert Warren Ferris, M. D., F. A. C. P., Watkins Glen, N. Y., in New York Jour. Med., 29:15:932-933: Aug. 1, 1929.

Before the medical adviser lies a wide field for psychotherapy. Daily encouragement and good cheer are necessary.

In cases of this fell disease where there is little physical exhaustion, muscular activity such as walking, pitching a ball, housework, shoveling snow or earth, etc., will change the current of thought.

It is important that a rather large amount of food be taken by the patient, reliance being placed upon oranges, green vegetables, milk, cream, butter, cottage cheese (or cream cheese), and eggs, to the exclusion of meat, with a tablespoonful of cod liver oil at the close of the meal.

Sleep is of prime importance.

Elimination by skin, kidneys and bowels is essential.

As the patient improves in general strength, exposure of the entire body to the actinic rays of the sun or of the quartz lamp, together with massage, constitute helpful measures. The light exposures should be very brief at first, such as three or four minutes at each session, lest the patient's surfaces be irritated, and interference with sleep result.